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JUNE 1996 ISSUE #88

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See page 38

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Scrollsaw Appliqué

p. 53

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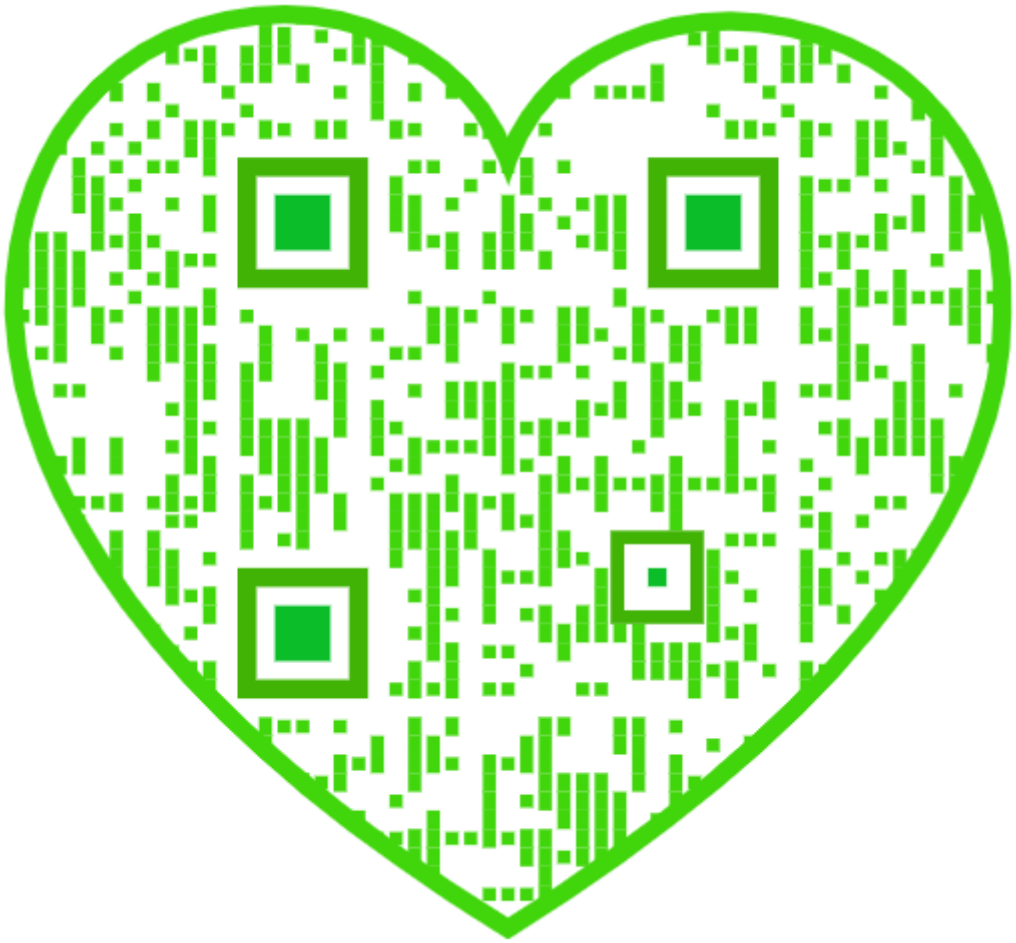

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THE EDITOR'S ANGLE

ANOTHER WOODWORKING EXCLUSIVE

FROM THE WOOD GANG

Please turn to *page 53* and find out how easy it is to create stunning appliqué accents like the one shown here. You'll be glad you did.

When we design woodworking projects for you here at *WOOD* magazine, we always try to keep things simple. We don't try to bowl you over with complex joinery and techniques that only advanced woodworkers can tackle. Why? Because doing that would only frustrate you. We'd much rather help make your project-building experiences successful.

One thing we do try to do, though, is to go beyond the ordinary "look" with each and every project that we design for you. Sometimes, achieving this involves using two or more complementary species of wood for a project, rounding-over the edges of one or more project parts to create a more-tailored look, or any number of other design enhancements.

Not long ago, we came up with an intriguing way to dress up certain projects. Jim Downing, *WOOD* magazine's design editor, had just finished designing the beautiful jewelry case shown *above*. (It appeared in our sister publication, *Weekend Woodworking Projects®*, issue 42.) But when he stepped back to take a look at it, he decided that the design needed an accent at the top of the arched door. The rose and oval you see there now is what we call a scrollsaw appliqué.

Until now, to achieve this look you had to purchase embossed birch or beech moldings and carvings from mail-order catalogs or specialty woodworking stores. Now, through the magic of this novel technique, you can transform any pattern into a professional-looking appliqué, using any wood species you want.

When I first saw Jim do this, I couldn't believe how easy it is. Then, when he and Tom Jackson, *WOOD* magazine's general-interest editor, had the same terrific results, I knew we had a woodworking breakthrough. Do yourself a favor—take the time to read the article titled "Scrollsaw Appliqué" on *page 53*, and follow the step-by-step photos and instructions we present. I guarantee you'll become excited as you learn about this previously not-well-known technique.

***Note**: To order the issue that the appliquéd jewelry case appeared in (#42), call 800/572-9350 or write to:* Weekend Woodworking Projects *Back Issue Sales, P.O. Box 9255, Des Moines, IA 50306-9255. It's $5.95 ppd.*

Larry Clayton

Photographs: King Au

Print this article

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This issue's cover wood grain: white elm

TR215 - Sliding Compound Miter Saw

The Freud Sliding Compound Miter Saw - It's new. It's fast and it's very precise. It's versatile like a radial arm saw and easy to adjust. Best of all, it comes complete with a Freud saw blade, specially designed for our new miter saw. And the price? Very reasonable.

So what's different about this saw? We made the base wider than others on the market. This gives the saw more stability while remaining compact enough for easy transport. And the fence gap is extra close, so you won't have to worry about cutting small pieces.

We've equipped the saw with a 9.7 amp motor, powerful enough to glide through the most difficult materials. For safety, it has an electronic brake to bring the blade to a quick stop once the trigger is released. We've also included positive stops for quick adjustments. Maximum bevel and miter capacity 45° - cuts wood up to 11 3/4" x 2 3/4".

And the blade? With Freud's name on it, you can be sure it's the best. It features an anti-kickback design for safety, laser cut blade body to run true and micro-grain carbide teeth for clean, accurate cutting. If you would like more information about Freud's Sliding Compound Miter Saw or other Freud products, give us a call.

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WOODEN WEDGES

6 ways to use them in your shop

Wedges in one form or another have helped people gain a mechanical advantage for centuries. For example, did you know that screws and bolts function like wedges because they are simply inclines wrapped around a cylinder?

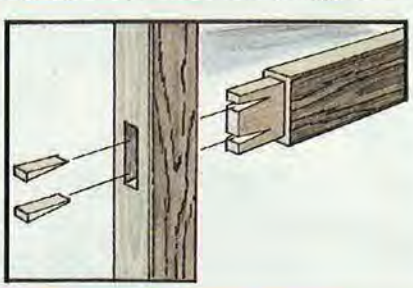
In this article we'll share with you some of the tasks we frequently accomplish with the assistance of wooden wedges. To safely and effectively cut your own wedges, see the simple tablesaw jig on *page 94*.

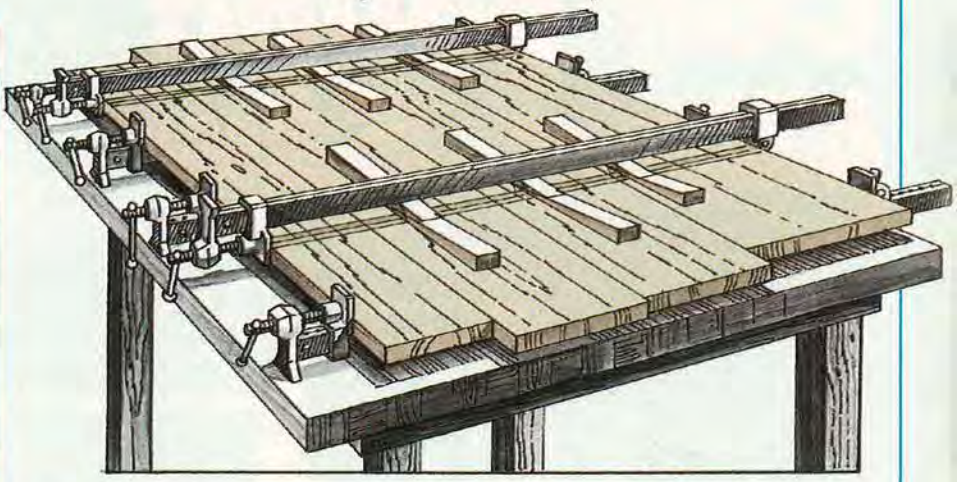
1 Reinforcing through tenons

A tenon that goes completely through its mortise provides a mighty strong joint to projects. To make this joint even stronger, while also adding to its custom appearance, you only need to add a few small wedges.

As shown in the drawing *below,* you need to cut v-shaped notches into the tenons. Make the notches just slightly narrower and shorter than the wedges.

To assemble the joint, apply glue to all surfaces of the tenon except the end grain (including the surfaces of the notches). Place the tenon into its mortise and drive the wedges into the notches to tighten the tenon into the mortise. Trim the wedges.





2 Flattening edge-to-edge glue-ups

When gluing workpieces edge-to-edge, you want to keep the assembly as flat as possible while it's clamped. This saves you from a lot of planing, sanding, or scraping to make the assembly flat after the glue dries.

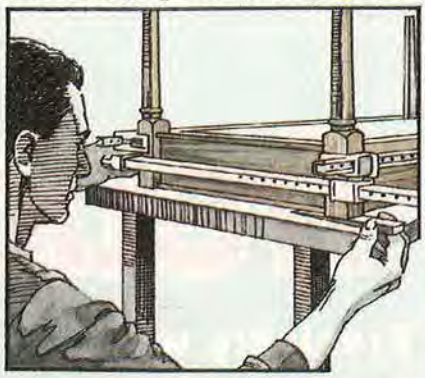
To strengthen the assembly and help keep its edges aligned during glue-up, it pays to add splines or biscuits between the edges. But, even after doing this, the assembly may bow when you apply clamping pressure.

To avoid this problem, alternate the bar or pipe clamps on the top and bottom faces of the assembly. Then, use a straightedge to determine if the assembly has bowed. If so, remove the bow by tapping opposing wedges between the clamps and the assembly as shown *above.* If the crown of the bow faces down you will have to flip the assembly over before inserting the wedges.

3 Leveling benchtop assemblies

To build furniture pieces and other projects that need to sit on flat surfaces without rocking, you must assemble them on a flat and level surface. Unfortunately, few of us have a benchtop or other large surface that fits this description. Once again, wedges provide you a solution.

First, dry-assemble the project to check the fit of its parts. Then, disassemble, apply glue, and clamp together the project on whatever surface is available to you. Check the assembly for flatness and level by using a level, or by sighting along it as shown *right.* (The illustration shows this being done to a coffee table turned upside down.) To bring a corner up, loosen the clamps slightly and insert the necessary wedges. Retighten the clamps after truing up the entire project.



Continued on page 6

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WOODEN WEDGES

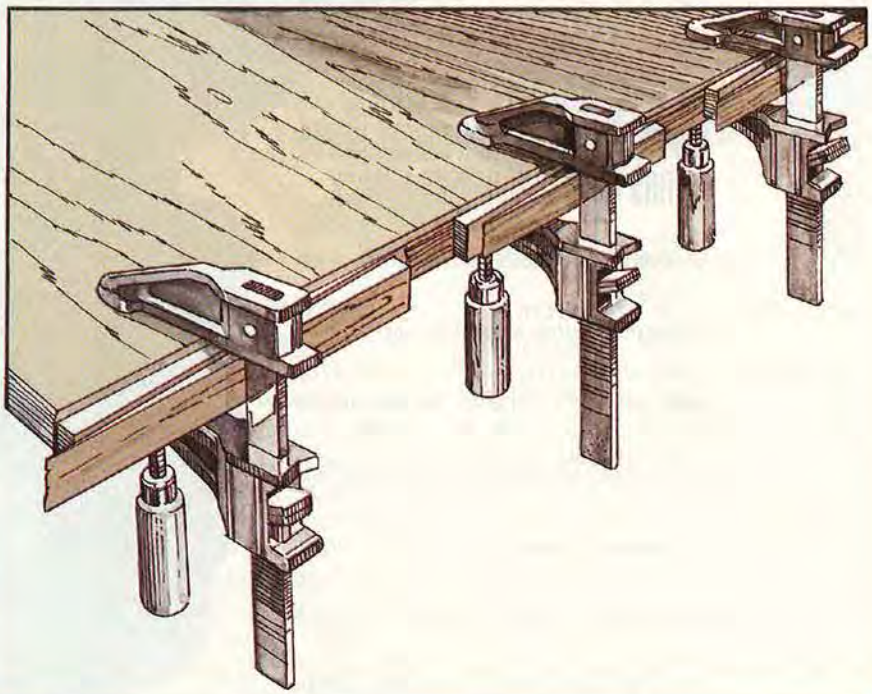
Continued from page 4

4 Leveling base cabinets

Floors are rarely level and perfectly flat, so any time you install a base cabinet you'll need to level it by tapping wedges (or "shims" as they're often called) under the cabinet at low spots in the floor as shown *below.* After installing the shims, trim them flush with a fine-toothed handsaw. Be careful to protect the saw and your floor by not cutting completely through the shim. Cut to within 1/16" of the floor and snap the shim off. Install a toekick to the cabinet to hide the wedges.

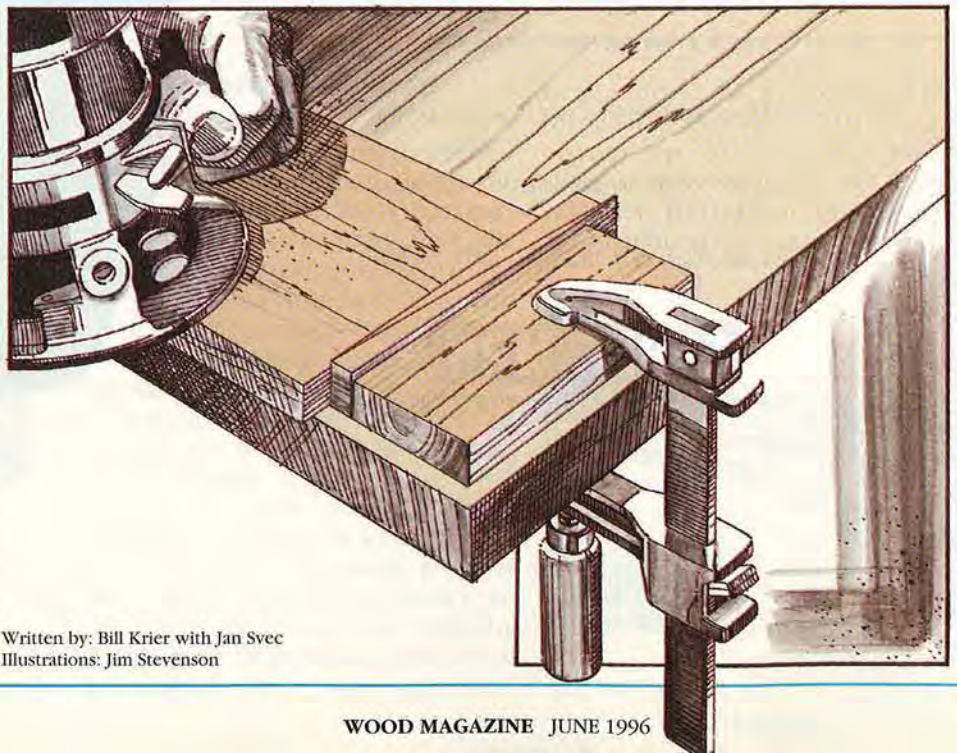
5 Clamping edge banding

You can buy special clamps for applying edge banding to plywood, but here's a way to do it using your bar clamps and a few trusty wedges. Simply secure the clamps along the edge at 6-12" intervals. Apply glue to the banding, slip it into place, and tap wedges between the banding and the clamp bars. To precisely position the banding, tap the wedges tighter and tighter as you adjust the banding flush with the plywood surfaces. If the jaws of your bar clamps don't have pads, be sure to protect the plywood by placing scrap pieces between the jaws and the plywood.



6 Securing workpieces on a benchtop

Even if you have no vise, bench dogs, or hold-down accessories with your workbench, you can quickly secure workpieces with the help of a couple of wedges. All you need do is clamp a scrap block to one end of your bench, then clamp a second block about ½" from the opposite end of the workpiece. Next, drive opposing wedges between the end of the workpiece and the second block as shown *right.* This will hold your workpieces securely for routing, sanding, carving, planing, scraping, or other tasks.



Written by: Bill Krier with Jan Svec
Illustrations: Jim Stevenson

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Dremel or Ryobi: Which rotary detail tool will work best for you?

Until last year, Dremel made the only hand-held, high-speed rotary detail tool on the market. It was called the Moto-Tool and recently has been renamed the Multi-Pro. Now, though, Ryobi has introduced a similar machine, the Multi-Tool, at a lower price. To see how they stack up, I took both into my shop for a comparison test.

Ryobi's main bragging point on the Multi-Tool is that it generates more torque than the Dremel Multi-Pro. I found that you can bog down and stop the Dremel with enough pressure, whereas the Ryobi hogs out waste easily because of its higher torque. The Ryobi's extra torque also saves you time on rough work such as sharpening a lawnmower blade or cutting bolts.

While the Dremel runs from 5,000 to 30,000 rpm, the Ryobi operates in a narrower speed range, 8,000 to 23,000 rpm. At top speed with the Dremel, I felt I had better control in sanding, carving, and routing. The high-speed also results in less loading on the abrasive accessories.

These two machines also differ in their speed controls. The Dremel has an infinitely variable speed control—the further you push the speed-control lever on the tool housing, the higher the speed. This makes it easy to change speeds single-handedly without shutting off the tool—the lever is right by your thumb. Ryobi employs a rocker-type on/off switch and a dial that you turn to one of five settings. I prefer the dial because it eliminates the guesswork of trying to return to a previous setting.

One thing I noticed on the Ryobi that bothered me is a tiny bit of play in the tool arbor. I discovered this while modifying the teeth on a chainsaw chain. The cutting disk I was using on the Ryobi wandered back and forth about 1/32" making an accurate cut impossible. The play, I found, comes from a loose-fitting brass coupler between the motor armature and tool arbor. Dremel uses a one-piece armature and arbor that's on-the-money accurate.

Dremel Model 3955

Both of these tools have brush-type motors, but the ease with which you replace the brushes differs markedly between the two. On the Dremel, just unscrew the brush caps on the side of the tool housing, remove the old brushes, insert new brushes, and replace the caps. The Ryobi requires disassembly of the tool housing to gain access to the brushes. This procedure is best left to an experienced tool repairman.

As for the collets, the Ryobi accepts 1/8" and 3/32" shanks. The Dremel collets take shanks of 1/8", 3/32", 1/16", and 1/32". And finally, Ryobi's 10' cord gives you more reach than the Dremel's 6' cord.

So which tool should you buy? I think the Dremel's smooth operation, precise control, and easy brush replacement make it a better tool. But if you're primarily interested in a general-purpose grinding, routing, and sanding tool—and less concerned with precision—you can save $20 by buying the Ryobi.

—Tested by Dave Henderson

PRODUCT SCORECARD

Dremel Multi-Pro Model 3955

Performance	★ ★ ★ ★ ★
Price	About $70
Value	★ ★ ★ ★ ☆

Dremel, P.O. Box 1486, Racine, WI 53401. Call 800/437-3635.

PRODUCT SCORECARD

Ryobi Multi-Tool Model HT20VSK

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Price	About $50
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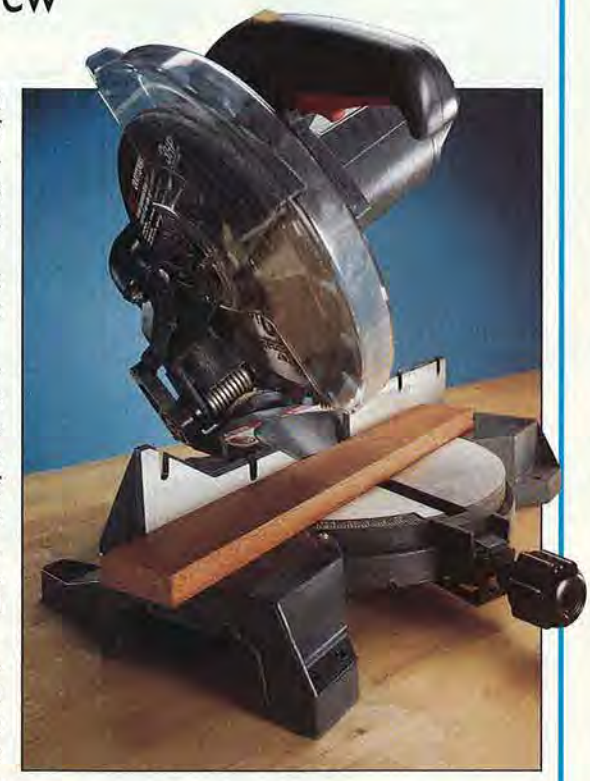
TOOL BUYER'S UPDATE

Continued from page 8

Power and portability distinguish two new compound mitersaws from Sears



Recently, Sears introduced two new compound mitersaws—a 10" and a 12" model—that include a number of convenient and desirable features. Having worked with both, I came away with the impression that the manufacturer has done a lot of homework and loaded these saws with many smart, convenient features.

For starters, both saws have a carrying handle positioned over the center of gravity. This makes them easy to pick up (without squatting) and haul around single-handed. The cast-aluminum construction keeps the weight down to 27 pounds for the 10" model (shown *below*) and 42 pounds for the 12" saw (shown *right*).

I also was impressed with the 15-amp motors that power these two machines. They provide more muscle than many mitersaws in this category, most of which draw just 13 amps.

In terms of capacity, the 12" saw cuts a nominal 4×4 at 90° and 45°. It also will cut through a nominal 2×8 at 90° or a 2×6 at 45°. The 10" saw cuts clear through a 4×4 at 90° too. At 45°, it will cut a 4×4 to a width of 2¾". On nominal 2× material, the smaller saw cuts up to 5½" at 90° and 4" at 45°. For beveling, the 12" saw cuts 2¾"-thick stock and the 10" saw cuts stock up to 1⅞" thick.

One of my favorite features on the smaller saw is the square edge of the plastic blade guard. It gave me an undistorted view of the exact spot the blade contacts the workpiece. On the larger saw, the rounded edge of the guard slightly distorted my view.

The miter and bevel cursors on both saws proved easy to read. The bevel scales are located to the right of the pivot assembly where I could see them without having to crane my neck. On the 10" saw, a detent system (a spring-loaded catch that stops the table at specific positions) is set at 0°, 22.5°, and 45°. The 12" saw includes those settings, additional stops at 15° and 30°, and color-coded miter scales—a red scale for the angles between 0° and 45° and a yellow scale for rafter pitches such as 4/12, 6/12, and so forth. A hairline miter cursor and Vernier calibrations (a finely graduated scale) on the 12" saw permit adjustments as fine as one-quarter of a degree.

Sears puts a combination-style steel blade on the 10" saw and a 32-tooth carbide-tipped blade on the 12" saw. The steel blade cuts too rough for anything but framing lumber. The carbide-tipped 12" blade cuts much better—but not as smooth as a top-quality blade. If you need super-clean cuts, plan to spend about $60 for a 60-tooth 10" blade and about $90 for a 72-tooth 12" blade.

Both of these saws are priced $20-$30 less than comparable saws on today's market. The 12" saw includes two additional refinements lacking on the smaller saw—a faster blade brake and a zero-clearance insert to prevent tearout on the bottom of workpieces. These give it the edge in my overall performance ratings.

—Tested by Dave Henderson

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Value	★ ★ ★ ★ ★

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But here's what we'd suggest: Go out and shop any of the tools you see here. Run some stock across our Deluxe 6" Jointer. Compare our Contractor Saw or 14" Band Saw straight up with the competition. Look, really look at the details. Then ask yourself how you'd like to invest your money.

There's a big difference, you know. The Delta Difference is what separates precision from "close." Nine spokes on our precision-balanced band saw wheels instead of six. Or an extra capacitor on the table saw motor to boost running power. Precision-ground cast iron tables for a lot more accuracy. You get a smoother feel and a lot more pleasure all the way around. A lot more for every dollar you spend.

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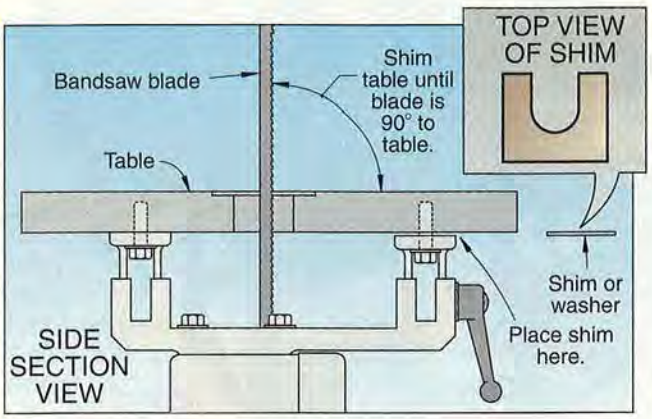
Another dimension to bandsaw adjustment

Congratulations for the fine "tune up" advice in the October 1995 issue. While working on a bandsawn jewelry box, I discovered the need for an additional adjustment not mentioned in your article. The blade must be squared to the table front-to-back, as well as side-to-side, when cutting a pattern from thick material or stacked pieces. Any error will be evident when entering or leaving a cut at an acute angle on this material.

My solution is to shim between the tilt quadrant and the table on the low side. Cut the sheet-metal shims in a "U" shape, so they can easily be slipped in place after loosening the cap screws holding the quadrant to the table (refer to the drawing *below*). This adjustment should be made after you align the wheels and the blade tracking, but before setting the guides or tilt adjustment.

—David Ayres, Lakeland, Fla.



A new supplier for clock parts

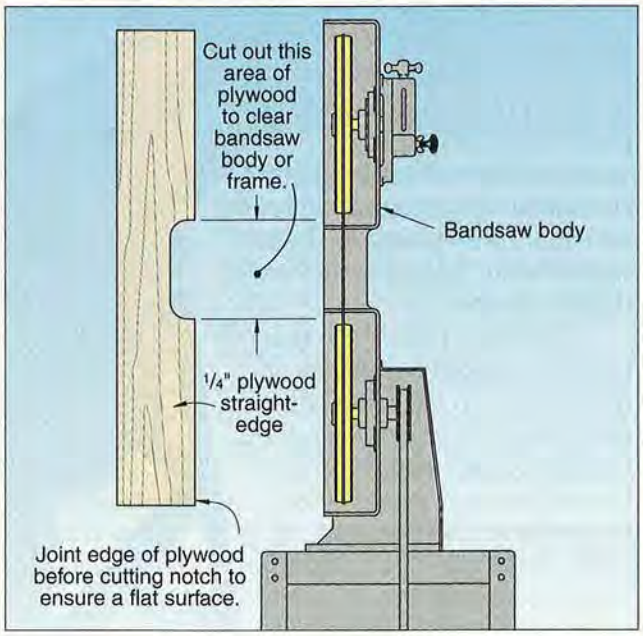
We have a new supplier for the special parts needed to complete the "Turn-of-the-Century Tall Clock" featured in our September 1993 issue (#63). This kit includes a quartz movement, a 40" pendulum and the 16¾"-square paper face. You can order this kit, catalog #93FC, priced at $64.95 per kit, from Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247. Or call 800/346-9663 to order. A photocopy of the article is included with the kit or available from us for $4.

A tool for tricky bandsaw alignments

I was going to use your article in the October 1995 issue to tune up my bandsaw, but found I can't align the wheels with a straightedge because the body casting of my bandsaw is in the way. Can you come up with an alternative way of doing this?

—Wayne A. Cooper, Orange, Calif.

We suggest you create a "C-frame" straightedge from a piece of ¼" plywood long enough to cross both wheels of your bandsaw. Use your jointer to dress a true edge on this plywood. Then, cut out a notch to clear the bandsaw's body casting, as shown in the drawing below. *If you start with a straight edge, you will have a good alignment tool.*


Cut out this area of plywood to clear bandsaw body or frame.
Bandsaw body
¼" plywood straight-edge
Joint edge of plywood before cutting notch to ensure a flat surface.

Home-made lathe kit changes

We have received new price and ordering information for the "Back-to-Basics Shop Lathe" parts kit as described in the *WOOD* book *Woodworking Tools You Can Make*. The lathe spindle kit is currently priced at $211, and can be ordered from: Rudy Sanchez, Northwest Carving Supplies. P.O. Box 407, 402 Fulton, Manhattan, MT 57941. Call 406/284-6527. The power switch (catalog #A526) can be ordered from: AMT, P.O. Box 70, Royersford, PA 19468. Call 215/948-0400 for the current price of this switch.

Print this article

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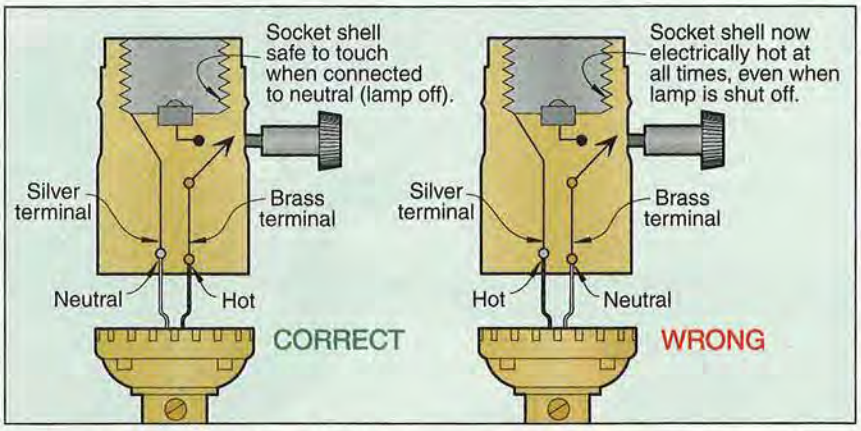
Check out this new detachable blower vac with 6 peak horsepower at your Sears store, or for convenience, call the "Sears Shop at Home" service, 1-800-377-7414.

What woodworkers need to know

WORRY-FREE WIRING



Most woodworkers feel perfectly comfortable building a lamp like the one on *page 72*. But, fewer feel confident when it comes to wiring it. Here are a few illuminating facts and hints that can help you see electricity in a new light.

What's hot and what's not?

Alternating Current (AC) electricity—the kind the power company sends to your house—constantly varies in voltage and changes its flow direction 60 times per second. Thus, references to positive (+) and negative (-) poles, so familiar to us from battery-powered Direct Current (DC) devices such as flashlights and portable radios, don't apply to AC.

Instead, electricians refer to the *hot* lead and the *neutral* lead when talking about AC circuits. The distinction is important: the hot lead will give you an electrical shock, the neutral won't. Commonly in AC wiring, black insulation designates the hot wire; white, neutral; and green or uninsulated, ground.

Keep the leads straight

Electrical safety requires correct connections. In devices such as lamp sockets with screw terminals for connections, the color of a terminal screw signifies which lead connects to it. A brass or gold-colored screw identifies the hot terminal, a steel or silver-colored one signifies the neutral. Sometimes, they're labeled, too.

Even a lamp can give you a jolt if you don't connect the wires properly. How? Take a look at the lamp diagrams *above*.

In the first one, correctly wired, neutral connects to the shell of the socket. The hot wire goes to the switch, which controls the center contact in the socket.

In the second one, the wiring has been reversed. Now, the hot lead runs to the socket shell.

The lamp will work either way. But, the socket shell in the second case will be electrically hot whenever the lamp is plugged in, even with the switch turned off.

The danger lies in the ease with which someone can come into contact with the socket shell, or the bulb base that screws into it. Simply stated, if you're grounded and touch the hot-wired shell, you'll receive a shock—even with the lamp turned off.

Plugs can prevent mixups

Polarized plugs help prevent hot/neutral mixups. The plug's design—one wide prong and one narrow one—ensures that it fits into the outlet only one way. This guards against inadvertently reversing hot and neutral by inserting the plug backwards.

Plugs with three prongs also prevent such reversals. In addition to fitting only one way into the outlet, the three-prong plug provides a separate path to ground for stray current. In either type, the hot lead connects to the plug's narrow prong.

Cords to carry the load

Standard flat electrical cords, including extension cords, carry current-capacity ratings, based on wire gauge. You'll usually find the wire gauge (and often, the safe-load rating) stamped along one side of a cord. In addition, the insulation is usually ribbed along the other side, providing a handy tracer to help you keep hot and neutral straight. (Ordinarily, the ribbed side serves as the neutral conductor.)

Here are safe capacities for cords with two conductors or two conductors plus ground. (Other factors can play a role, so follow the cord manufacturer's recommendation, if different.):

18 gauge	10 amps
16 gauge	13 amps
14 gauge	18 amps

(To find current flow in amps if you know power consumption in watts, divide by the line voltage—usually considered to be 110 volts. For example, 330 watts at 110 volts = 3 amps. Multiply amps by the line voltage to find watts. For example, 10 amps at 110 volts = 1100 watts.)

Continued on page 16

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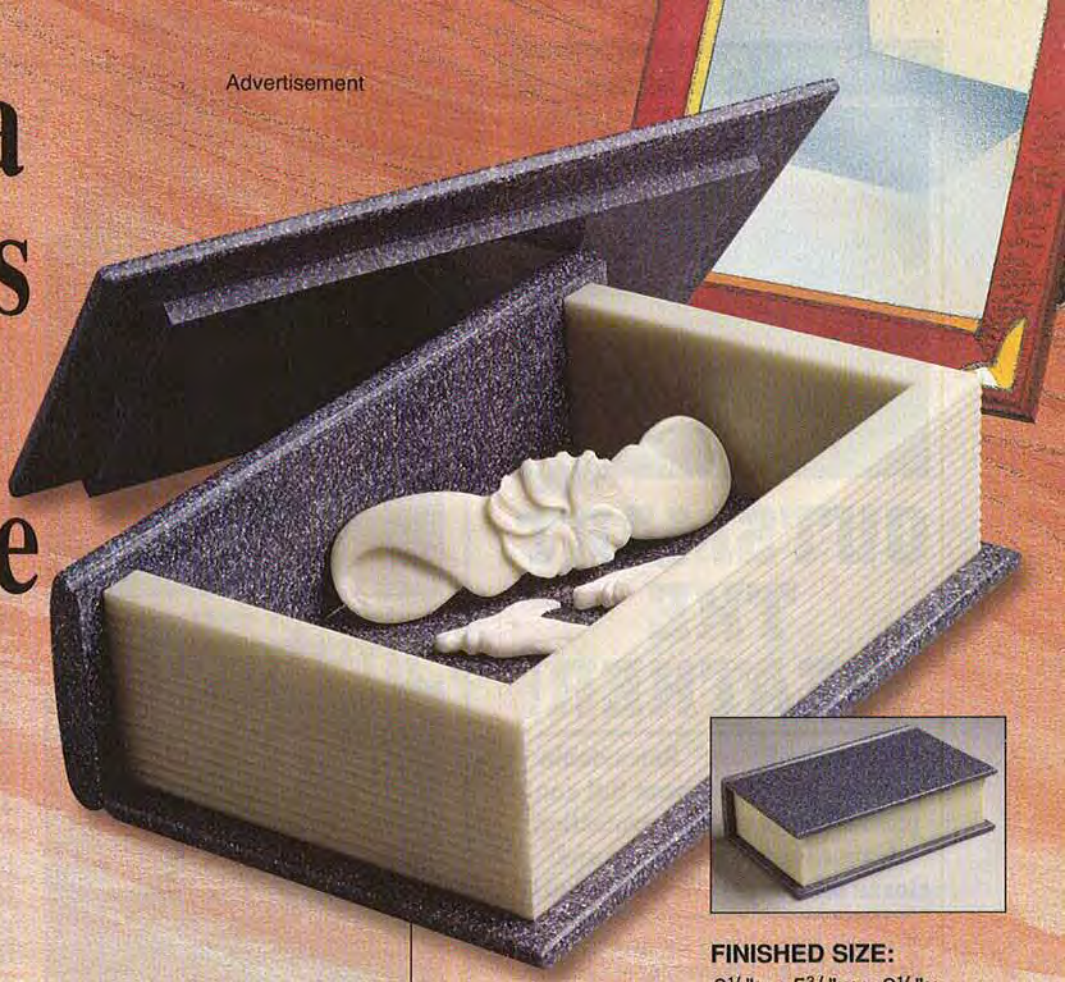

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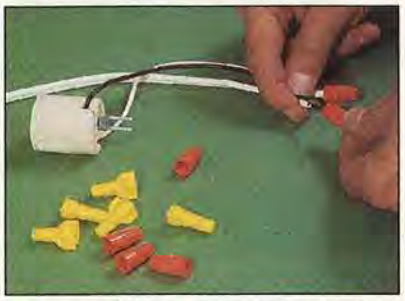
What woodworkers need to know

WIRING

Continued from page 14

A wire stripper removes insulation from conductor ends easily.

Wrap wire clockwise around terminal screw so tightening the screw draws the wire in.



Twist conductors together before screwing on the wire connector.

Here's how to make the connections

1 Strip about ¾" of insulation from the end of each of the cord's conductors. A wire stripper like the one shown in the photo *left* does the job quickly and neatly. (We got the tool shown from Graybar Electric, a nationwide electrical-supply dealer. Many hardware stores carry them, too.) Or you can carefully score the insulation with a knife, then pull it off. Be careful not to cut the wire strands.

2 Twist the strands in each conductor end tightly together. This keeps them from fanning out when you make connections.

3 For screw-terminal devices, form the end of the wire into a hook. Place the hook beneath the head of the screw with the end pointing clockwise around the screw, as in the photo *left*. This way, tightening the screw draws the wire into the connection rather than pushing it out.

4 Tighten the screw. Make sure you haven't left wire strands sticking out of the connection.

5 To join the cord to wire pigtail leads instead of screw terminals, twist the cord conductor and the lead firmly together, then screw on a wire nut connector as shown *left*. Select a connector of the proper size for the number and gauge of the wires you're joining. The packaging lists permissible combinations.

Heed these safety hints

- Unplug any electrical item before working on it.
- Double-check your connections before plugging the item in.
- Wire a switch only into the hot lead, never the neutral.
- To prevent a cord from pulling loose, restrain it where it enters a device such as a lamp socket. If the device doesn't have a built-in clamp, a knot tied in the wire, as shown in the middle photo, works well.
- If you're uncertain about (or uncomfortable with) the wiring job you're working on, seek assistance from a qualified electrician.

Illustration: Roxanne LeMoine Photographs: John Hetherington

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*1995 Automotive Performance, Execution, and Layout Study, based on 27,859 responses. **We calculated resale using avg. trade-in values for full-size '94 models vs. MSRPs, published in '95 Jan.-Sept. *N.A.D.A. Official Used Car Guide*® monthly editions.

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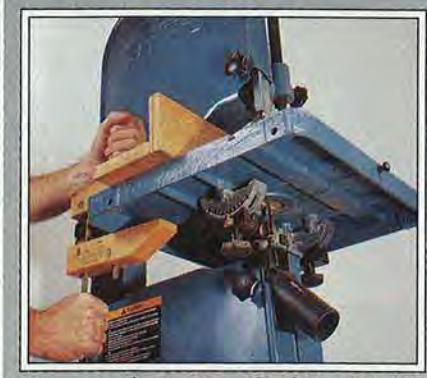

Our top shop tip ends this unstable situation with a clamp.

Anyone who has ever tried to clamp something to a drill press or bandsaw table will be pleased to read our top shop tip for this issue. The ribs on the underside of these tables almost always interfere with the lower jaws of the clamp unless you use C-clamps. And C-clamps don't give you much jaw depth.

Reader Tom Ryan came up with a great solution in the tip *right.* I also was impressed by the fact that Tom's tip takes advantage of small pieces of scrap stock that you probably have lying around.

Many of you have, no doubt, come up with dozens of quick fixes and jigs like this over the years. By sending these ideas to us, you may earn $40, maybe even a tool prize. To be considered for publication, send a letter with a photo or drawing of the idea to:

Tips From Your Shop
(and Ours)
***WOOD*® Magazine**
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We try to publish original shop tips, so please send your idea to only one magazine. Also note that we cannot return submissions. Thanks!

Tom Jackson
General-Interest Editor

Dowels help clamps overcome cast-iron table ribs

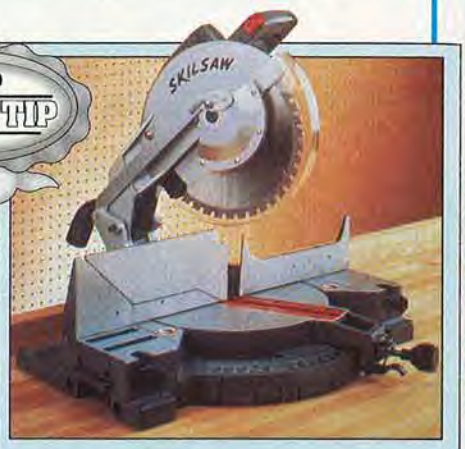
To get a good bearing surface for the lower jaw of your handscrew clamps on ribbed tables, try this trick. Build a pair of the clamping pads shown *below.*

Make the length of the ¼" plywood piece about 1" shorter than the distance from the front edge of your handscrew jaws to the first screw. This gives you some latitude in positioning the pad.

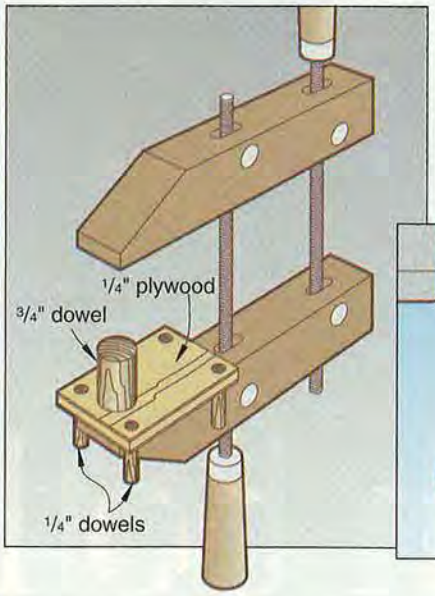
Size the width of the plywood so you can position the four ¼" dowels in the corners to fit snug over the jaw of the handscrew. Position the ¾" dowel about ½" back from the front of the plywood, and cut the dowel about ⅜" longer than the width of the ribs on your table.

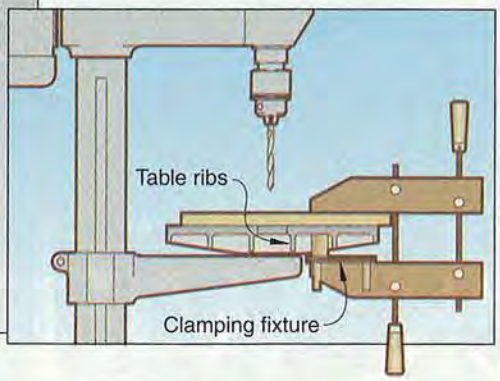
—Tom Ryan, Fredericksburg, Texas

TOP SHOP TIP



For sending in the top shop tip of this issue, Tom Ryan receives a Skil HD3812 Compound Miter Saw. Good work, Tom!

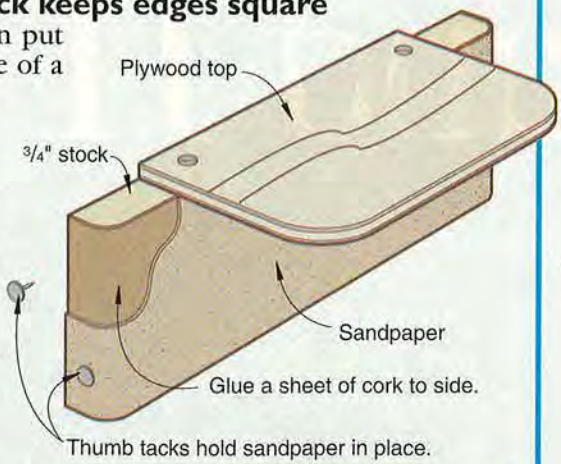




Right-angle sanding block keeps edges square

If you're not careful, you can put a subtle chamfer on the edge of a workpiece by sanding it freehand. To keep your corners crisp, build the right-angle sanding block shown *right.* By keeping the plywood top flat on the face of the workpiece, your sanding will always yield a clean, straight edge that's perpendicular to the face of the workpiece.

—Ted Kusmak, Alexandria, Minn.



Continued on page 22

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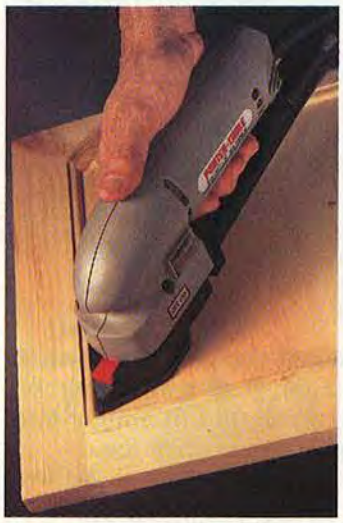
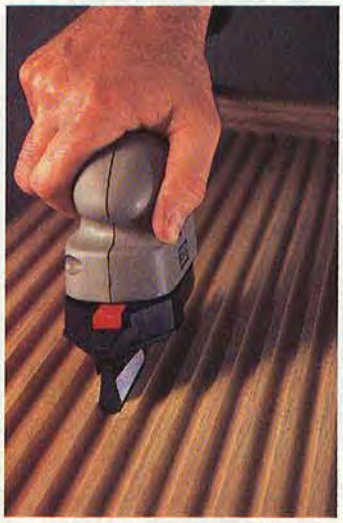
No More Hand Sanding.





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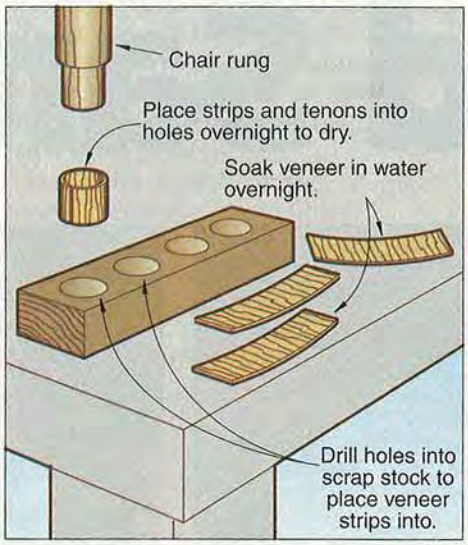
Continued from page 20

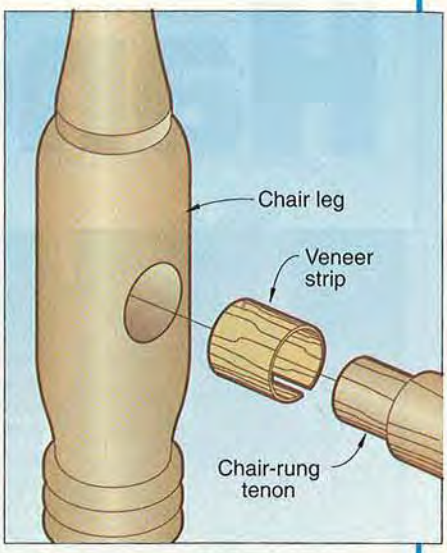
Veneer strips help old chair rungs fit tightly in new holes

Furniture that you disassemble to refinish or repair usually doesn't go back together as tightly as when it was first made. But here's a method to ensure that the rungs on an old chair will fit tightly.

First, cut some veneer strips as wide as the tenons on the rung are long and as long as the circumference of the tenons minus 1/16". Make as many veneer strips as you have tenons to repair. Soak the strips in water overnight, or until pliable. Then, with a drill bit that measures the diameter of the tenons plus two times the thickness of the veneer, widen the mortise in the chair leg. Use the same bit to also drill a series of holes in a piece of scrap stock.

Place the wetted veneer in the holes and insert the tenon. Allow the veneer to completely dry. This shouldn't take more than 24 hours. Then, remove the tenon and veneer from the hole, apply glue to the tenon and the inside of the veneer band, and reinsert them in the hole in the scrap stock. When the glue dries, you'll have a tenon that, with a little bit of sanding, should fit snugly into the mortise in the chair leg.


Chair rung
Place strips and tenons into holes overnight to dry.
Soak veneer in water overnight.
Drill holes into scrap stock to place veneer strips into.



—Julius Ventura, Kenosha, Wis.

Continued on page 24

Scroll Saws

15" Scroll Saw

MODEL G1572

ONLY $109.95

- 1/10 H.P. motor
- 2" max. cutting thickness
- 15" maximum depth
- Table tilts 0 - 45°
- Shipping weight approx. 40 lbs. (add $9.95 for Shipping & Handling)

22" Scroll Saw

MODEL G1060 ONLY $159.95

- 1/8 H.P. motor
- 2" max. cutting thickness
- Table tilts 0 - 30°
- Safety shield & toggle switch w/removable key
- Shipping weight approx. 61 lbs (add $9.95 for Shipping & Handling)

16" Variable Speed Scroll Saw

MODEL G1257

ONLY $169.95 NEW!

- 1/8 H.P. low-vibration motor
- 16" maximum cutting depth
- 400-1,800 variable strokes-per-minute
- Shipping weight approx. 40 lbs (add $9.95 for Shipping & Handling)

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1 HP, 110V, 8 amps, 3450 RPM, all ball bearing motor; overall height: 40"; table tilt: 0° to 50°; table surface: 6-1/2" x 12-3/4"; two position work table for disc or belt use; disc speed: 1720 RPM; belt: 6" W x 48" L; belt speed: 1280 FPM; wt: 121 lbs.

ITEM 06852-5VSA
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- 2 HP, 110V, 1 phase, 11 amp, 8000 RPM
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- 10-1/8" x 9-1/8" feed table
- 19" x 16-5/8" x 16" overall dimensions
- 10-1/8" blade size
- 2-blade cutter head
- 61 lbs. shipping weight
- Stand sold separately

ITEM 32377-3VSA **$199.99**

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SAVE $20

13 GALLON INDUSTRIAL PORTABLE DUST COLLECTOR

Work in a dust-free atmosphere with this quality dust collector. It develops over ten times the suction of most shop vacuums. Flexible PVC hose will last through years of bending, flexing and temperature variations. 4" hose is sized to pick up large chips from jointers, saws, shapers and planers. Unit has heavy duty ball bearing castors. Hose sold separately. Bag capacity: 13 gallon; Motor: 110V, 7 amp, 1 HP; Hose inlet: 1; CFM: 660; Ship. wt.: 56 lbs.

ITEM 31810-4VSA **$119.95**

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Make a square hole in the fraction of the time it takes by hand!. Easier layout for professional mortise and tenon joints in furniture, cabinets, and restoration. Fence with hold down clamp keeps workpieces from lifting off the table. Large capacity – up to 5" maximum height. Includes fence, workpiece clamp, 1/4", 3/8", and 1/2" mortising chisels and bits.

- 5" max. workpiece height
- Accepts .745" chisel shanks
- 1/2 HP, 110V, 2.3 amps
- 3-1/2" swing
- 59 lbs. shipping weight

ITEM 30036-5VSA **$179.99**

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TiN COATED FORSTNER BIT SETS

Titanium nitride runs cooler, cuts easier, and lasts longer than standard steel! Includes 3/8" shanks and individually organized wooden case. Rockwell hardness range from 55-65 HRC.

20 PC. SET

- 20 sizes from 1/4" to 3/4" by 16ths, 7/8", 15/16", 1" to 2" by 8ths

ITEM 31130-7VSA **$34.99**

16 PC. SET

- 16 sizes from 1/4" to 2-1/8" by eighths

ITEM 32404-5VSA **$39.95**

SAVE UP TO 32%

CONTROLLED PRESSURE, NON-MARRING HARDWOOD CLAMPS

These hand screws will clamp without scratching or marring your workpiece. Hardwood jaws distribute pressure evenly, and can easily be adjusted for non-parallel surfaces and odd shapes.

JAW LENGTH	JAW CAPACITY	ITEM	PRICE
8"	4-3/4"	04852 -3VSA	$3.99
10"	6"	04853 -4VSA	$4.99
12"	8-1/2"	04854 -5VSA	$5.99

CENTRAL MACHINERY

SAVE $20

12" x 37" WOOD TURNING LATHE

Index pin contains 36 - 10° spacings for accurate fluting and marking on workpieces. Left and right turning face plates and 6" and 12" tool rests. (Stand sold separately). Distance between centers: 37"; Swing over bed: 12"; Spindle speeds: 575, 980, 1560, 2520 and 3580 RPM; Motor: 1/2 HP, 1725 RPM, 115V, 60 Hz AC, swing mounted to headstock; Drive spindle: No. 1 Morse taper plus 3/4-16 threaded; Tailstock: No. 1 Morse taper; 2-3/8" ram travel; Ship. wt.: 80 lbs.

ITEM 06841-0VSA **$139.99**

CHICAGO Electric Power Tools

13.2V 3/8" CORDLESS DRILL KIT WITH KEYLESS CHUCK

- Indicator on drill body notifies operator of low battery charge
- Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic extension bit, charger, battery, and keyless chuck
- Variable speed, reversible; 0 to 600 RPM
- 6 torque settings

ITEM 33165-4VSA **$49.95**

13.2V BATTERY

ITEM 33214-0VSA **$29.99**

CENTRAL MACHINERY

1/3 HP MOTOR

5 SPEED BENCH DRILL PRESS

- 620 to 3100 RPM
- 2" stroke, 8-1/4" swing
- 8-1/4" max. distance spindle to table
- 22-1/2" high, 47 lbs.

ITEM 05901-5VSA **$59.99**

29 PC. HIGH SPEED STEEL DRILL BIT SET

- 1/16" thru 1/2" by 64ths
- M-2 high speed steel
- Jobber length, straight shank
- Includes metal index

ITEM 00986-3VSA **$9.99**

CENTRAL MACHINERY

10", 2HP BENCH TABLE SAW

- Maximum depth of cut @ 90°: 3"; @ 45°: 2-1/2"
- Motor: 2 HP, 115V, 60 Hz, 13 amp, 4500 RPM
- Shipping weight: 40 lbs.
- Blade sold separately

ITEM 32648-5VSA **$79.95**

10" SAW BLADE

- 40 tooth carbide tips
- 5/8" arbor

ITEM 00529-3VSA **$8.99**

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- Includes: 3 & 4mm hex wrenches, oil, safety goggles, and molded case

Load capacity: 100-16 gauge brads/nails 3/4" to 2" long; Operating pressure: 60-100 PSI; Air inlet: 1/4" NPT

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- Infeed table size: 22-1/2"
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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 22

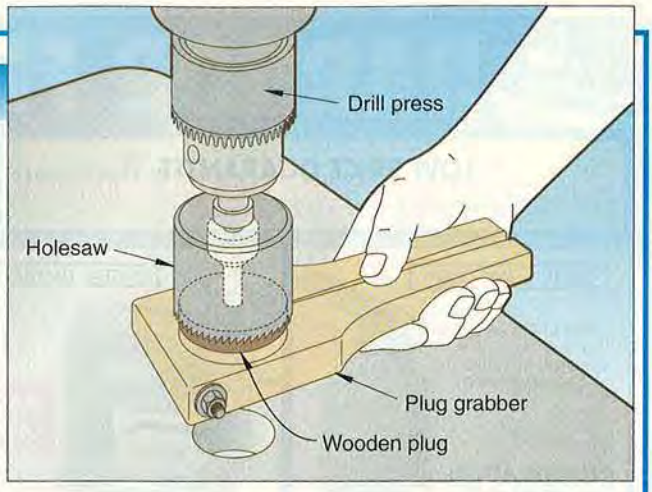
Get a grip on stuck stock with a grabber

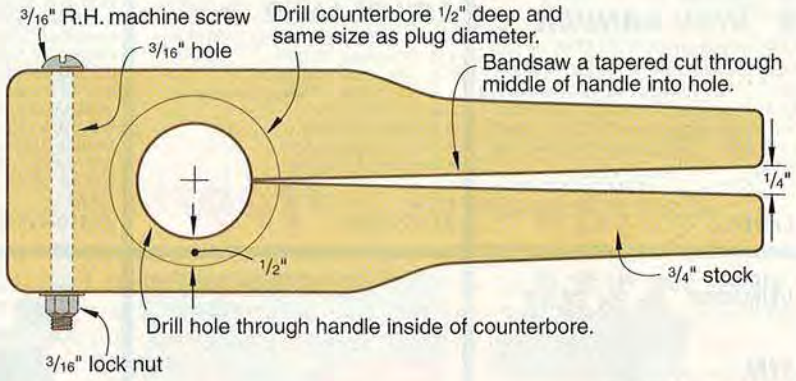
Have you ever tried to free a stuck wooden plug from the jaws of a holesaw? If so, you know that you can do a lot of damage to the wood workpiece trying to pry it out. Build this grabber, though, and you can free these wooden pieces with a quick twist of the wrist.

Size the grabber about 1" wider than the circular plug you're cutting and about 10" long. Turn it on edge and drill a ¼" hole for the machine screw as shown. Then, drill the counterbore and hole in the face of the workpiece, and bandsaw a tapered cut from the end of the handle to the hole.

For this grabber to work, the plug must protrude below the teeth of the holesaw about ¼". So when you cut your circles, don't lower the teeth completely through the stock. Rather, drill down until the pilot bit emerges from the backside of the stock. Flip the workpiece over, and complete the cut from the backside. This will give the grabber enough wood to grip.

—Bill Woodall, Gladys, Va.

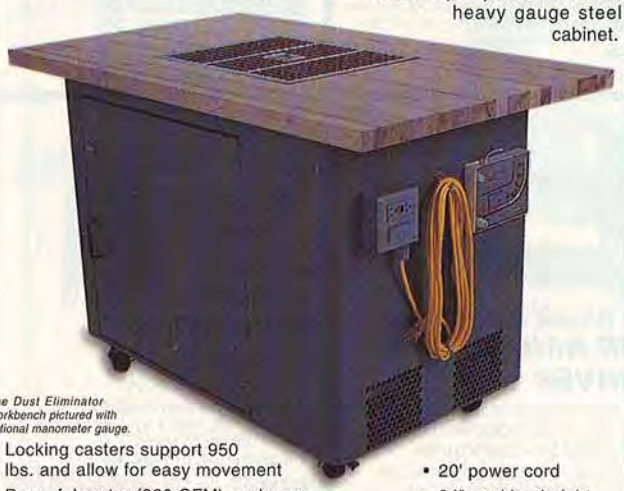



3/16" R.H. machine screw
3/16" hole
Drill counterbore 1/2" deep and same size as plug diameter.
Bandsaw a tapered cut through middle of handle into hole.
1/4"
1/2"
3/4" stock
Drill hole through handle inside of counterbore.
3/16" lock nut

Continued on page 26

At last... the ultimate workbench, downdraft table & complete air filtration system

Remove the dust **before** it can pass your face at a rate 3 times faster than the average ceiling-mounted unit! The Dust Eliminator Workbench collects dust at its source through a downdraft grid on its surface (for sanding) and a dust intake on the side (for airborne particles created by other shop tools). A generous 30"x 54"x1-3/4" select and better grade hard maple work surface sits atop a powder-coated, heavy gauge steel cabinet.



The Dust Eliminator Workbench pictured with optional manometer gauge.

- Locking casters support 950 lbs. and allow for easy movement
- Powerful motor (930 CFM) exchanges air 17.4 times per hour in a 20' x 20' x 8' shop
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Circle No. 1295

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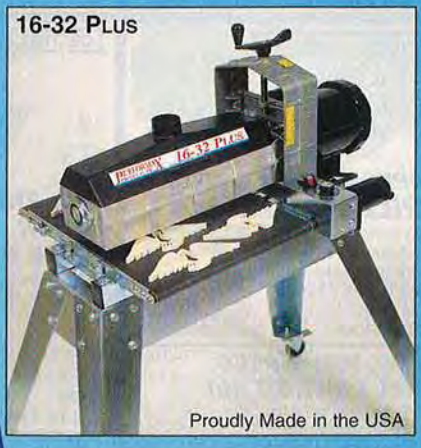

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Circle No. 78

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Circle No. 84

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Robo Grip Pliers, One man's persistence becomes America's passion!

What's the hottest new hand tool in the country today? It's Robo Grip pliers. The pliers with the unique self-adjusting feature that allows one-handed use and a perfect fit every time. The pliers that have won multiple technology and design awards for innovation and performance. If it were not for one man's tenacious efforts, however, Robo Grips might never have been developed.

That man is Hal Wrigley, president of Applied Concepts, the company which makes Robo Grips. Ten years ago he had a successful dental practice. His career was comfortable and his future secure. That all ended when he met and fell in love with the Robo Grip technology. He was so impressed with the tool that he sold his practice and purchased the production rights. Knowing little about tool making, he spent the next seven years of his life learning the business. He ate, drank, and slept tools, often working eighteen hour days. Even after major set backs, he never lost his belief in the product. What he ended up with was an American made tool that has revolutionized the entire pliers industry, using a patented spring-loaded, cam mechanism, Robo Grips automatically adjusts to fit a wide range of pipe, bolt, and automotive part sizes. Applied Concepts, now part of the Emerson Corporation, has become one of the largest manufacturers of pliers in the United States. So when someone tries to tell you that good old American ingenuity is dead, tell them to talk to Hal Wrigley... and hand them a pair of Robo Grips!

Robo Grips can be purchased at Sears and are available in both a 9" curved jaw and a 7" straight jaw style. Sears and Applied Concepts will be introducing three new jaw styles designed for specific needs this summer.

The Dremel MultiPro™ Tool.

At 30,000 rpm, nothing works faster.

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The Dremel MultiPro tool is the fastest high-speed rotary tool. It's extremely versatile. With up to 30,000 rpm it has the speed you need to effortlessly power through hundreds of jobs. You just guide the tool, the speed does all the work. 150 available accessories let you sand wood, shape plastic, polish brass, grind metal, and more. Look for our book with *175+ Uses* in specially marked MultiPro tool packages at hardware, home center and hobby stores. Or for a free copy, write: Dremel, Dept. W, P.O. Box 1468, Racine, WI 53406-1468.

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MultiPro
HIGH-SPEED ROTARY TOOL

TIPS FROM YOUR SHOP (AND OURS)

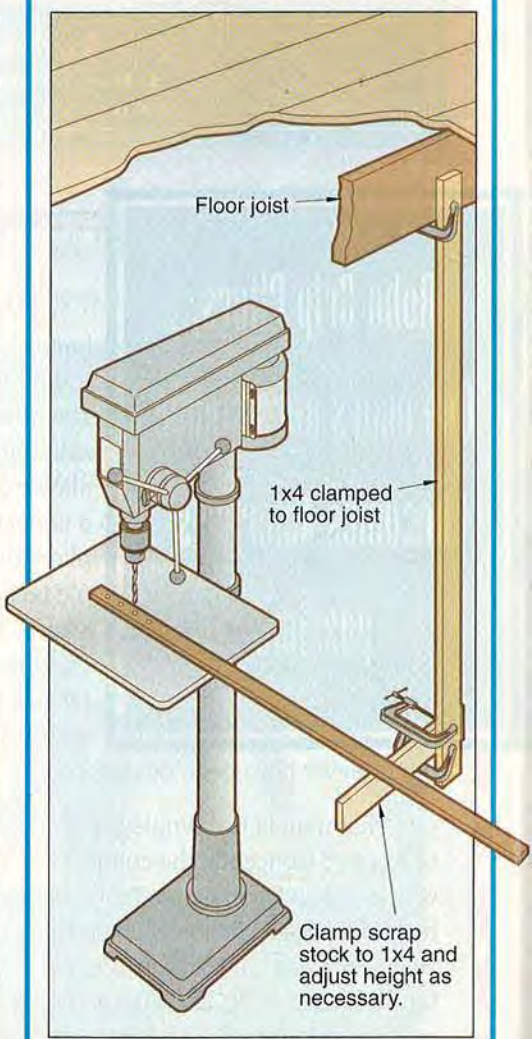
Continued from page 24

Try looking up when you need support for long stock

Finding floor space for a table extension in a crowded shop often means that you have to rearrange tools or other objects in the way. But the next time you need support for a long workpiece, look up to your floor joists for help instead.

To make this temporary support arm, simply clamp a 1×4 to an overhead joist with a large C-clamp. Then, clamp a shorter horizontal 1×4 to the vertical piece and position it level with your tool's work surface. If the clamps don't hold the weight of the workpiece, attach the 1×4 to the joist and the scrap stock to the 1×4 with wood screws.

—Frank Henderson, Liverpool, N.Y.



Continued on page 28

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WOODWORKER II
ALL PURPOSE RIP & CROSSCUT

WOODWORKER II	LIST	SALE	10%	20%
12"X40TX1"	$183	$129	$116	$103
10"X40TX1/8" or 3/32"	$156	$119	$107	$ 95
8-1/4"X40TX 3/32"	$136	$ 99	$ 89	$ 79
8"X40T 3/32"	$136	$ 99	$ 89	$ 79

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ONLY **$62 or $50** NET COST TO YOU AFTER USING SHARPENING COUPONS

Outperformed 36 other premium blades, both foreign and domestic!
WOOD® Magazine test, Sept. '93, pg. 45

The Proof Is In the Cutting

Both Woodworker II blades performed very well, whether cutting through butter-soft ¾"-thick pine or iron-hard 1¾"-thick ash. The 20° positive hook angle and 15° alternate top bevels give the blades an aggressive attack; we maintained a brisk, uniform feed rate while ripping a variety of woods on the powerful Unisaw and experienced no discernible resistance or slowing. On the smaller saws, switching to the thin-kerf blade allowed very similiar feed rates, again with barely noticeable resistance.

Although we've used blades that cut faster, their cut quality couldn't touch what we got with the Forrest blades. On solid stock, ripped edges came off our saws jointer-finished, smooth and slick with no visible teeth marks—good enough to edge-glue without additional machining. Crosscuts came out crisp and clean with no fuzzing or tiny splintering.

The Bottom Line

Performance of the Woodworker II is impressive enough that you could bolt this versatile, general-purpose blade on your saw and use it for virtually all of your cutting operations.

SHOP TEST, Woodworker's Journal Nov./Dec. '95 pg.78

CHOPMASTER FOR SLIDING COMPOUNDS & MITER SAWS

New specs, 5º Neg. Pts. & flat, runs out less than .002 for perfect, tight, smooth, splinter-free miter joints. **TAKE EXTRA 10% – 20% OFF COMBO SALE!**

NEW SIZES AVAILABLE	LIST	SALE
Delta Sidekick 6-1/2"x40Tx5/8"	$149	$ 89
Sears 8-1/4" & Delta 8-1/4"x60Tx5/8"	$170	$ 99
Hitachi 8-1/2"x60Tx5/8"	$179	$109
DeWalt 8-1/2" & Ryobi 8-1/2"x60Tx5/8"	$179	$109
Delta 9"x80Tx5/8"	$204	$119
Ryobi–Makita & all 10"x80Tx5/8"	$207	$129
DeWalt, Makita, B&D, Hitachi 12"x80Tx1"	$229	$139
Ryobi–Makita 14"x100Tx1"	$266	$179
Hitachi 15"x100Tx1"	$277	$189

For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I. Use small stiffener where possible.

WOODWORKER I – CROSSCUT For TABLE and RADIAL SAW

	LIST	SALE
12"x60Tx1" or 5/8" 1/8"K	$198	$139
10"x60Tx5/8" 3/32"K	$162	$129
8"x60Tx5/8" 3/32"K	$150	$109

OTHER SIZES AVAILABLE

NEW DELUXE DADO-KING!
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8" D. 5/8" Bore	$321	$289	$260	$245
10" D. 5/8" & 1" Bore	$389	$349	$314	$297
12" D. 1" Bore	$499	$449	$404	$382

(Bore up to 1-1/4" Add $25 — Plus $5.50 S&H)

DURALINE HI-A/T FOR TABLE & RADIAL SAWS ALL FLAT FACE

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Faster feed rates & absolute splinter control. Stops splintering on OAK/ BIRCH PLY VENEERS & MELAMINE.

SIZES AVAILABLE	LIST	SALE
7-1/4"x60Tx3/32" K	$149	$129
8"x80Tx1/8" & 3/32" K	$202	$169
9"x80Tx1/8" & 3/32" K	$207	$179
10"x80Tx1/8" & 3/32" K	$207	$159
12"x80Tx1-1/8"K	$212	$181

Other sizes available

Above 1" bore standard.

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Standard C-2 Carbide (below, left) and FORREST **still sharp** Oxidation and Corrosion Resistant Sub-Micron C-4 Carbide (below, right). Each shown after cutting 3,500 feet of MDF. Similar results obtained cutting particle board, melamine, and plywood.

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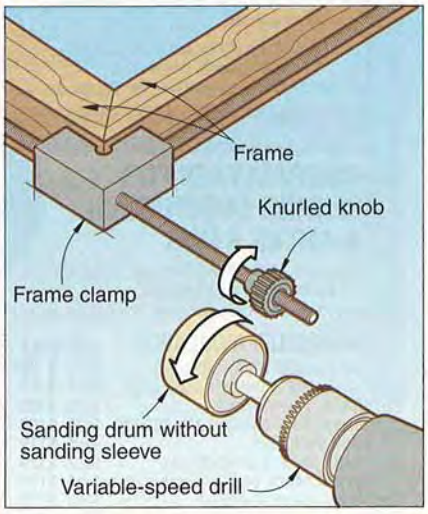
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 26

Put some zip in your clamping with a drum sander

If you're tired of taking the time to thread a knob onto a long piece of threaded rod, grab your portable electric drill and chuck a drum sander (without the sanding sleeve) into its jaws. Then, turn on the drill with the chuck spinning in reverse (counter clockwise), and gently touch the rubber drum to the knob. The knob will race along the threaded rod much faster than you could spin it by hand.

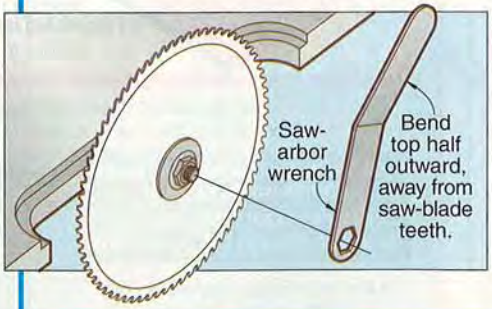
—Tim Gant, Blooming Glen, Pa.



Bent blade wrench prevents hurt hands

It only takes one slip when changing tablesaw blades to incur a nasty gash. To help move your hand out of the line of fire, bend your blade wrench. Place the midpoint of your wrench in the jaws of a machinist's vise and tap the wrench with a hammer until it's bent about 30°.

—Bill DeSoto, New Iberia, La.

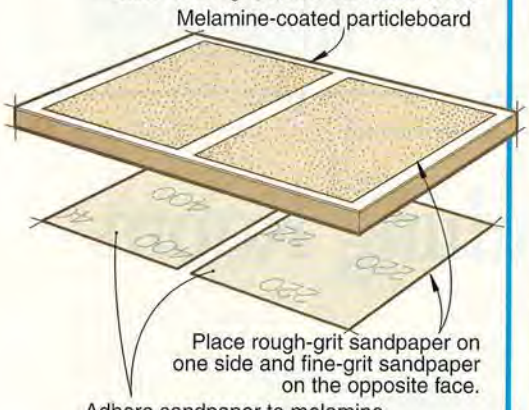


Small-part sanding board keeps workpieces flat

It's easy enough to hold or tape sandpaper to your bench to sand small parts. But any unevenness in your bench will translate into inaccurate results on the sanded workpiece.

If you need accurate small-part sanding, build a fixture like the one shown *below*. Cut a piece of melamine-coated particleboard 12" wide and 2' long. Attach four sheets of sandpaper to it, two on top and two on the bottom, with spray adhesive. Use four successively finer grits of abrasive. The melamine backs the sandpaper with a flat, hard surface, and having the four grits you need at hand helps you through the sanding in no time.

—Alvin Rosenfeld, Middletown, Conn.


Melamine-coated particleboard
Place rough-grit sandpaper on one side and fine-grit sandpaper on the opposite face.
Adhere sandpaper to melamine with spray adhesive.

A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Need a stopped dado with a square end? See how we made this cut with just a tablesaw on the base sides of the Treasure Tower on *page 67.*
- Are you tired of wobbly outdoor furniture? Use the lag-screw construction methods we employed on the picnic table and benches on *page 40.*
- Even if you don't build the lamp on *page 72,* you'll benefit from reading our wiring hints on *page 14.*

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WOOD ANECDOTE

SEQUOIA The protected giants

Imagine a single tree containing 500,000 board feet of lumber—enough for 35 new homes—and free of branches for at least two thirds of its height. This lumberman's dream will always remain just that, though, for the giant sequoia is protected.

One of two sequoia species remaining of the dozen or so that once grew in North America (the other is the commercial coast redwood), the *Sequoiadendron giganteum* are among the oldest and largest living things. Yet, there aren't many of them.

What remains of the giant sequoia can be found in some 70 groves of from five to 1,000 trees in California's Sierra Nevada mountains. You'll find the largest concentration of trees in Sequoia and Kings Canyon national parks. The largest giant sequoia—at 275' tall with a 36½' base diameter—grows in Sequoia National Park. It's estimated to be between 3,000 and 4,000 years old.

How can a tree live so long? The giant sequoia boasts a high tannin content that deters insect and fungus infestation. The tree also does not have pitch tubes through which fungi could penetrate. Fire, wind, and lightning take their toll, though, and an eroding soil base frequently causes it to topple.

Long before the giant sequoias became protected, lumbermen had pretty much given up on them anyway. Not only is their home the high elevations, but the wood's brittleness meant great loss of it in the felling.

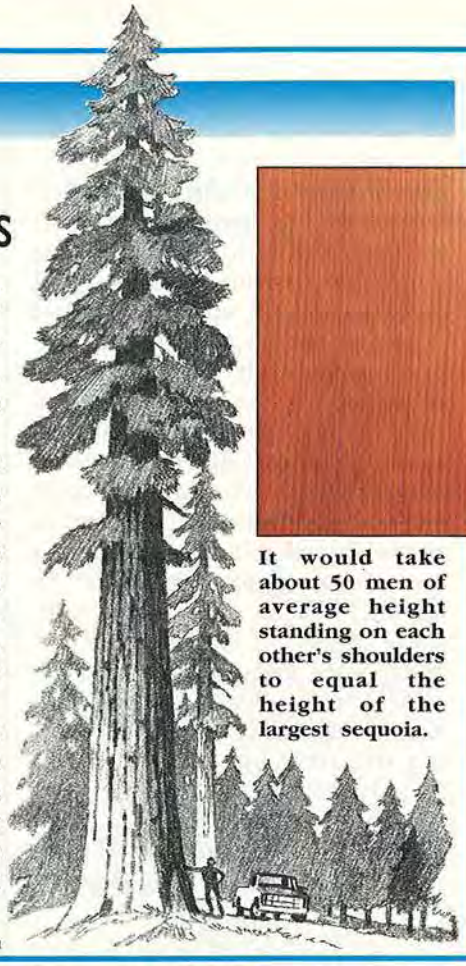

Illustration: Jim Stevenson

It would take about 50 men of average height standing on each other's shoulders to equal the height of the largest sequoia.

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*Better Homes and Gardens® WOOD® Magazine (Nov. '95)

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5402A	16" Beam Saw	528

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9820-2	Sharpener	208
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DW411	Palm Sander	58

DW930K	Cordless Saw	198
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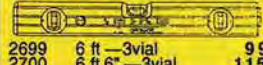

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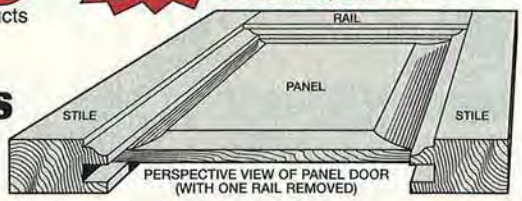

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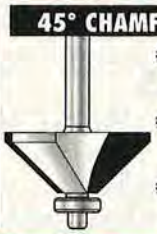
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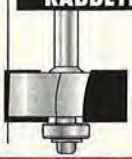
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WEE WONDERS

Craftsman Don Perkins doesn't cut corners just because he builds small.

Imagine turning a thimble from solid brass on your lathe. That's a plenty tough enough order for any woodturner, but how about if it were a miniature thimble barely 1/16" long?

To 71-year-old Don Perkins, it's all in a day's work. That's because for the last dozen or so years he has focused on working small, and by doing so, has built a national reputation for quality-crafted miniatures.

In the basement shop of his Des Moines, Iowa, home, you'll find a full complement of woodworking tools, but like his pygmy products, they're mostly scaled down from full-size. He rips and crosscuts stock on a tabletop tablesaw with a 4" blade. He turns bedposts, chair legs, and spindles on a tiny lathe. And to form the profile on a tabletop, he uses an inverted shaper with a teensy bit.

Yet, his miniature furniture and accessories reflect Don's dedication to careful craftsmanship; he doesn't skimp on

Continued

Above: **The two-seat Shaker-style rocker in 1:12 scale sells for about $50. Even accessories have minute detail: the punched-tin candle lantern on the shelf has a swinging door.**

Left: **Don Perkins specializes in miniatures, but the styles range from Shaker to Southwest. Gladys, his wife, made the needlepoint pillows. The twin rocker has a woven rush seat.**

Print this article

Don made the Governor Brewster chair (the one against the wall) from a photograph of the original. Note the pegged through-mortise-and-tenon on the table legs and the sharply defined turnings on the chairs.

The walnut corner chair features a crewel-work seat, and costs $90. Don painted a faux-marble finish on the tiny tabletop.

detail. "I don't like to use simple butt joinery," Don says. "My rule of thumb is that, almost without exception, whatever type of joinery appears in the full-scale piece I'm replicating, I use it in the scale piece, too."

How tiny is tiny?

In Don's tiny woodworking world, "miniature" usually means items built to a scale of 1" equaling 1', or 1:12 scale. That's what Don refers to as the "universal" miniature scale. There are other scales, though.

"Today, there's a trend to what is called half-scale, or ½" to the foot," Don points out. "There's even a one-quarter scale. That's one that model railroaders are familiar with. Then, there's the 2" scale that's associated with Barbie dolls. It's actually about 1.7" to the foot."

Don now talks expertly about down-sizing, but 13 years ago that expression had a totally different meaning. Back then, Don was working as a vocational rehabilitation counselor for a state agency. His concerns were directed at retraining disabled employees rather than readying a tiny Shaker side chair for staining.

"The first miniature furniture I made was built for my daughters in 1969 or 1970. I built doll furniture for them from toothpicks, meat skewers, old wooden venetian-blind slats, and pieces from melon crates—pretty much what was on hand. They were primitive, but they were the same scale that I use today."

In those days, Don was a full-scale woodworker, that is, he had built some furniture for his and his wife Gladys' home with skills that he had learned in a junior high manual-arts class. But small-scale woodworking had its appeal. "What I liked about it was my being able to manipulate miniature pieces more than I could full-sized ones. I had more freedom in the design," Don explains. "Plus, a lot of people—including me—are interested in miniature things because they're more like toys that we recall from our childhood."

In 1971, Don began selling his miniature pieces through a local gift shop. By 1983 he and Gladys had built their miniature interest into a thriving business by selling through mail order and at miniature shows. So, after careful consideration, Don took early retirement from his state job.

"It was kind of scary, without the health benefits and all," recalls Don. "But the thing I liked about it was that no matter how productively I was working for the state, I still got paid the same amount. And vice versa. I could be minimally productive and get the same amount. But working for myself, I was in control of my income. If I worked diligently, there was a proportional payoff."

One-stop shopping for miniatures

Don's diligence did pay off. The sale of miniatures made mortgage-payments, paid utilities, put food on the table, and sent their three children through college. Looking back, those were busy times.

"When we were trying to get established in the miniature field, Gladys and I would do about 12-14 shows a year, from coast to coast, and service the mail orders," says Don. He also began offering kits for chairs, stools, and

Don's criteria for successfully working small

Over the years, Don has noted a growing sophistication among collectors of miniatures. "It used to be that if an item was just small, it would sell well," he comments. "Not so today. Most of the buyers, for example, have always been women, and they're getting pretty savvy about woodworking."

In order that his miniature pieces pass even the toughest scrutiny, Don strictly adheres to several criteria:

• *The piece must be accurately scaled.* As obvious as it might seem, this is perhaps the most important aspect of miniature work. "The overall scale must be correct or else it does not look right, especially with other pieces. All parts of the piece must be in harmonious scale with each other, especially the hardware and the wood thickness. If you're off 1/16", it turns out to be fairly large in 1:12 scale," Don advises.

Regarding wood thickness, the miniaturist primarily works with 1/8"-, 3/32"-, 1/16"- and 1/32"-thick stock. The 1/8" and 1/16" thicknesses he resaws from 4/4 stock on his tablesaw. Other stock he gets through mail order.

• *The piece must be properly crafted.* This means that all joints must fit tightly, and the piece must be square where it's supposed to be square and round where it's supposed to be round. "Lathe turnings must be sharply defined," Don adds, "and all drawers must move in and out smoothly."

• *The piece must have a pleasing finish.* "Sand all wood smooth, and put on a low-luster finish," he says. "A gloss finish doesn't look right. And clean up any glue squeeze-out because it will really show." Color also must be in scale. For example, a black or bright red piece would stand out too much in miniature scale. On his duck decoys, for instance, Don uses dark gray accents rather than black.

• *Use wood appropriate to the piece.* Wood grain should be as nearly in scale as possible, according to Don. Oak, with its open grain, is inappropriate in most pieces. But maple, birch, cherry, and occasional pieces of walnut have grain that doesn't look out of scale.

• *The piece should have all the required detail.* Don lives by the rule that if a full-scale piece has decorative molding, so should the miniature. And if it has a drawer, the small version should have one, too, and it must be functional.

rockers. Gladys, who Don says began doing miniature needlework in self-defense, started making fabric accessories such as rugs and embroidered throw pillows. She now offers these in kit form as well.

The Perkins' miniature business proved successful because—like a good furniture store—they offer a full line, plus a variety of accessories. And the buyer gets top quality at reasonable prices.

In early period furniture, buyers can select from colonial chairs, tables, cupboards, beds, stools, settees, benches, and more. There are also numerous Shaker pieces, some French provincial, and even Southwest styles. Accessories include fireplaces, candle standards, chandeliers, wall sconces, punched-tin candle lanterns, rocking horses, mirrors, pillows and quilts, pegged hat-and-coat racks, and even teensy waterfowl decoys. In fact, Don and Gladys' price list of available items is eight pages long! And most furniture pieces fall into the $20 to $60 range. Kit prices run about one-third less than the finished item.

"At a miniature show you'll find everything that you would at a home show for full-sized pieces," Don notes. "There's lighting, accessories, linens, glassware, tableware, guns, everything you can think of. Everything that exists in full-scale can be found in miniature. That's why I offer so many different items—kind of like one-stop shopping, at least in early period furniture."

Another reason that Don creates such an extensive line is that he likes the type of furniture that he makes. "I started making period furniture because that's the kind that we furnish our home with," he says. "But I don't copy a historical piece exactly, unless its a specific commission, like the Governor Brewster chair. That's a copy of the original that was commissioned by a Virginia couple who were distantly related to him. Otherwise, I feel awkward about copying—it's like stealing someone else's idea. Instead, I interpret and use some of the salient features. And my furniture has sold well, except for some regional differences. Colonial furniture sells better in the East, while the West likes Victorian styles."

Teeny tools of the trade

Beginning woodworkers frequently graduate from benchtop tools to floor models in order to tackle larger projects. Don was just the opposite. He went from floor-model machinery to benchtop tools in order to work smaller.

In his shop you'll only find three full-sized woodworking machines. There's a Hegner scrollsaw with a 14" throat. Don added a plastic-laminate, zero-clearance table insert, reducing the loss of parts here. Then, behind his workbench stands a Rockwell drill press; beside it, a stationary

Continued

Above: **At his Lilliputian tablesaw with its 4" blade, Don crosscuts walnut that he's resawn and sanded to 1/16" thickness. Besides walnut, he regularly uses maple, birch, and cherry.**

Above right: **At the scrollsaw, Don cuts the fretwork legs for a Victorian side table. In the background, plastic bins cache patterns and jigs for Don's many miniature offerings.**

Above: **Among the assortment of decorative accessories that Don makes are waterfowl decoys barely 3/4" long. He offers ducks, geese, and shorebirds, each accurately painted.**

belt/disk sander. The rest of his machines are special equipment, made for down-sized work.

"This old Montgomery Ward Powercraft benchtop tablesaw was my first piece of small equipment," says Don, patting it almost affectionately. "It has a 7" blade, and I still give it lots of use."

A few steps away, atop another workbench, sits a second tablesaw, but a teeny-weeny one. "This is made by Jarmac just for miniature work. It has a 1/2" arbor and takes 4" blades. I've even got a carbide-tipped one for it," Don points out. "Just as with a full-sized tablesaw, I can rip and crosscut stock on it."

Next to the tablesaw, Don has a miniscule lathe. And it does a lot of work for his period furniture. "I bought it and the duplicating attachment from Ancher Manufacturing out in Oregon many years ago. It has a variable-speed, 1/5 hp motor," notes Don.

This woodturner doesn't have miniature chisels to match his lathe. Instead, he uses jeweler's files. "And my secret weapon," he says, "is a twist-drill bit ground to a sharp edge. You see, one of the big problems with miniature spindle turnings is that the shapes on the spindle aren't sharply defined.

Above: **An inverted mini-shaper made from a die grinder contours the edge of a Victorian side-table top. In assembly line fashion, Don will make 310 such tables for a special commission.**

Above right: **The duplicator attachment on his miniature lathe allows Don to exactly replicate each post of a bed. In his hands, jewelers' files take the place of traditional turning tools.**

Above: **Making and selling quality miniature furniture means providing plenty of demanding details. Here, Don punches the tin for a $95 pie safe that will be no more than 6" tall.**

But with this, I can go in the recesses and sharpen them up, like a beading tool."

To the left of Don's lathe is his "overhead shaper." Actually, it's a Sears Craftsman die grinder modified to fit into a mount. For bits, Don relies on a selection of power-carving burrs.

With all those tools and the techniques he's learned over the years, it might seem that Don could skillfully do anything in miniature. But that's not quite true.

"I haven't figured out how to effectively make small-scale dovetails," he says with amusement. "I even bought a miniature dovetail jig once, but it didn't work. And I'd just love to have dovetails on my drawers." With that small problem, Don just might have something in common with many other woodworkers.

Want to try a tiny treasure?

For a descriptive price list of Don's miniatures and kits, send a self-addressed, stamped, business-size envelope to: Don Perkins, 1708 59th St., Des Moines, IA 50322.

Written by Peter J. Stephano Photographs: King Au

Our best-ever
PATIO TABLE and

Enjoy picnics on your porch or patio this summer with this beautiful table and matching benches. We've kept the construction simple so that you can spend more time enjoying the pieces and less time building them. We ran a glider project in the June 1995 issue that complements this project perfectly. If you're interested in building it, see our offer at the end of this article.

For a firm foundation, start with the table base

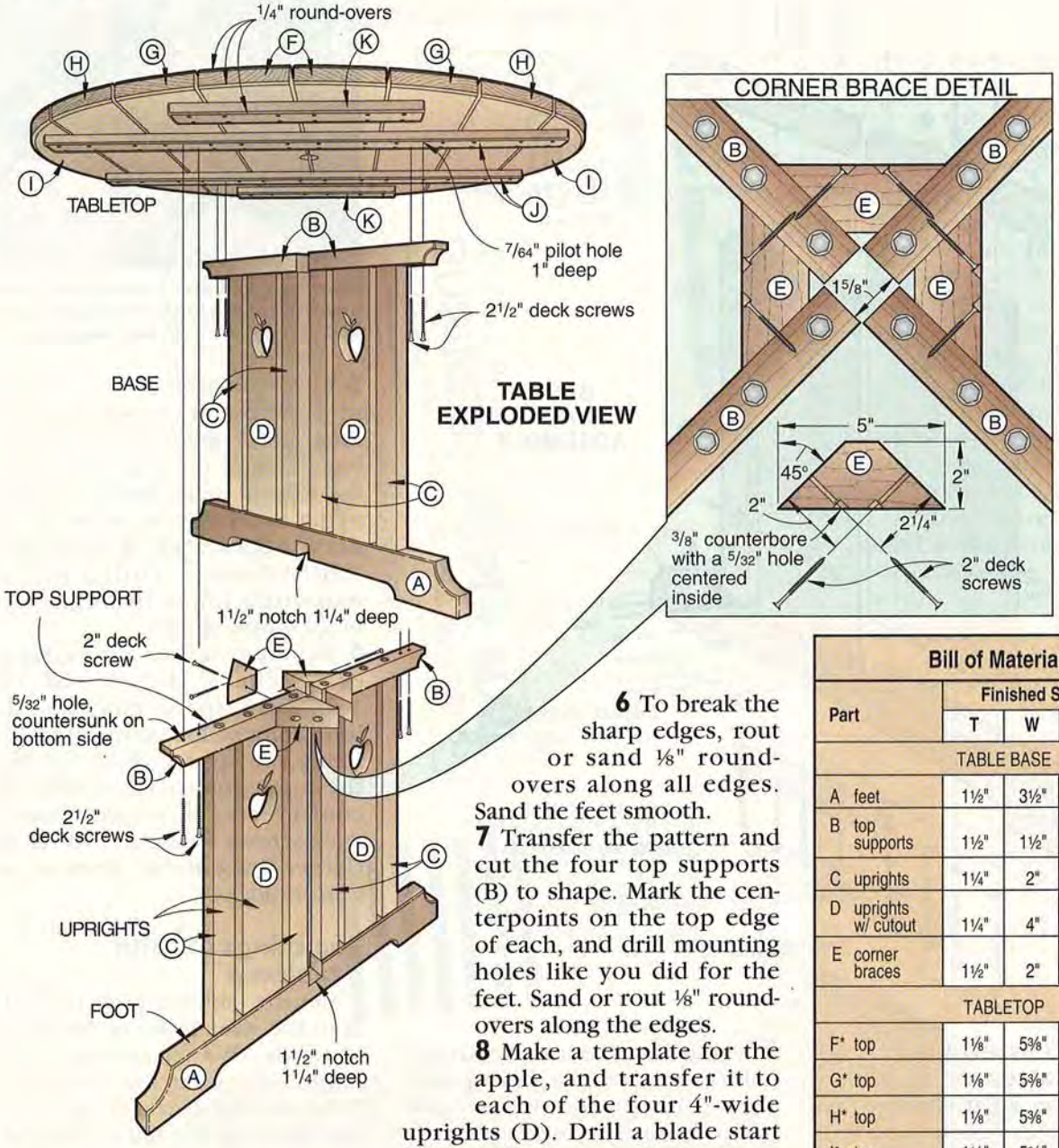
1 Cut the feet (A), top supports (B), and uprights (C, D) to the sizes listed in the Bill of Materials. (We cut the base pieces from 2×4 and 2×6 cedar. Since this stock comes with mill-rounded edges, we planed some of the pieces to 1¼" thick for flush joints. Redwood, although more expensive and becoming increasingly difficult to find, would also work as an attractive alternative.)

2 Transfer the full-sized half pattern for the feet (A) from the *WOOD PATTERNS®* insert in the center of the magazine to a piece of hardboard, thin plywood, or poster board. Cut the template to shape and use it to mark the outlines and notches for both feet. *Note that the notch on one A is on the top edge while the notch on the mating A is on the bottom.*

3 Bandsaw the feet (A) to shape. Fit your drill press with a 2"-diameter drum sander, and sand the bandsawed radii smooth.

4 Mount a dado blade to your tablesaw, and attach a wooden extension to your miter gauge. Now, cut the mating notches where marked.

BENCHES



5 Using the dimensions on the *WOOD PATTERNS®* insert, mark the eight centerpoints on the bottom of each foot. Using a Forstner bit, drill ¾" holes ⅜" deep, centered along the bottom of each foot. (We clamped a fence to our drill-press table to keep the holes centered on the edge.) Switch bits, and drill a 5/16" hole through the center of each ¾" hole.

6 To break the sharp edges, rout or sand ⅛" roundovers along all edges. Sand the feet smooth.

7 Transfer the pattern and cut the four top supports (B) to shape. Mark the centerpoints on the top edge of each, and drill mounting holes like you did for the feet. Sand or rout ⅛" roundovers along the edges.

8 Make a template for the apple, and transfer it to each of the four 4"-wide uprights (D). Drill a blade start hole, and use a scrollsaw to cut each apple cutout to shape.

9 Paint the apple cutouts now. To do this, brush the surfaces *around and inside* the apple cutouts with lacquer. The lacquer minimizes wicking of the paint to the surrounding wood. Brush on red and green high-gloss exterior enamel paint. After the paint has dried, use a palm sander to sand the lacquer off the surrounding surfaces.

Continued

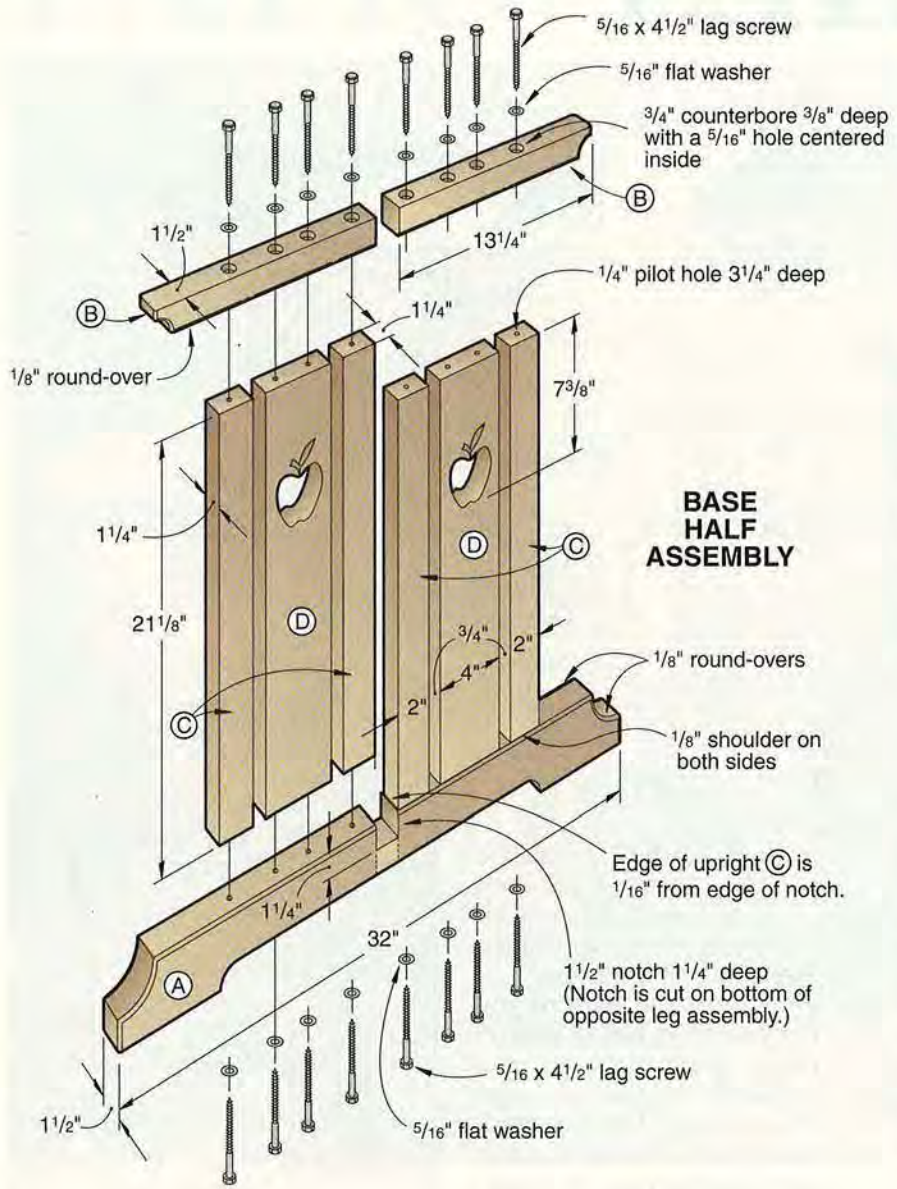
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
TABLE BASE					
A feet	1½"	3½"	32"	C	2
B top supports	1½"	1½"	13¼"	C	4
C uprights	1¼"	2"	21⅛"	C	8
D uprights w/ cutout	1¼"	4"	21⅛"	C	4
E corner braces	1½"	2"	4½"	C	4
TABLETOP					
F* top	1⅛"	5⅜"	45"	C	2
G* top	1⅛"	5⅜"	44"	C	2
H* top	1⅛"	5⅜"	38½"	C	2
I* top	1⅛"	5⅜"	30"	C	2
J top cleats	¾"	2½"	38"	C	2
K top cleats	¾"	2½"	16"	C	2

* Blank size, cut to shape according to the how-to instructions

Material Key: C–cedar

Supplies: 2" and 2½" deck or stainless steel screws, 32–5/16×4½" lag screws with 5/16" flat washers, #8×1½" flathead wood screws, red and green high-gloss exterior enamal paint for the apple cutout, clear exterior finish.



Working on a flat surface and using spacers to establish even gaps, glue, and screw each base half together.

It's time to assemble the base halves

1 Working on a flat surface, dry-clamp (no glue) each base half together, using the dimensions on the drawing *above*. (We used ¾" spacers between parts C and D for even gaps. Cut a spacer block measuring 1⅝×1⅝×18" to separate the inner uprights C 1⅝" apart. To center the 1¼"-thick uprights C and D between the 1½"-thick feet and top supports A and B, we laid ⅛" strips of wood under parts C and D as shown in the photo *above right*.)

2 Using the previously drilled holes in the feet (A) and top supports (B) as guides, drill ¼" pilot holes into the ends of the uprights (C, D).

3 Disassemble the base half, keeping the pieces in the same order in which they'll be reassembled. Finish drilling the pilot holes to their final depth of 3¼".

4 Glue, clamp, and screw the base half together as shown in the photo *above*. Be careful not to overtighten the lag screws and strip the wood. Repeat steps 1–4 to assemble the other base half.

5 Rip a piece of cedar 2×4 stock to 2" wide and crosscut it to 25" long. Now, miter-cut the corner braces (E) to the shape shown on the Corner Brace detail accompanying the Table Exploded View drawing and the *WOOD PATTERNS®* insert. Drill a pair of mounting holes through each brace where shown.

6 Slip the two base halves together to check the fit. Fit the 1⅝×1⅝×18" spacer block into the top center of the base assemblies. Using the spacer block to align the top supports (B), screw the corner braces (E) in place with 2" deck screws where shown on the Corner Brace detail. Remove the spacer blocks.

Top things off with a tabletop

1 Cut the tabletop parts (F, G, H, I) to the sizes listed in the Bill of Materials. (We cut ours to length from 1⅛" cedar deck boards.) Now, cut the cleats (J, K) to the sizes listed in the Bill of Materials. Cut seven ¼×1⅛" spacers the same lengths as parts F–I.

2 Rout a ¼" round-over along the bottom edges of the cleats (J, K) where shown on the Tabletop drawing *at right*.

3 Clamp the two Fs together with a spacer between the boards and the ends flush. Go to your drill press, and drill a 1⅝" hole in the center to accept an umbrella if you plan to use one. Drill through

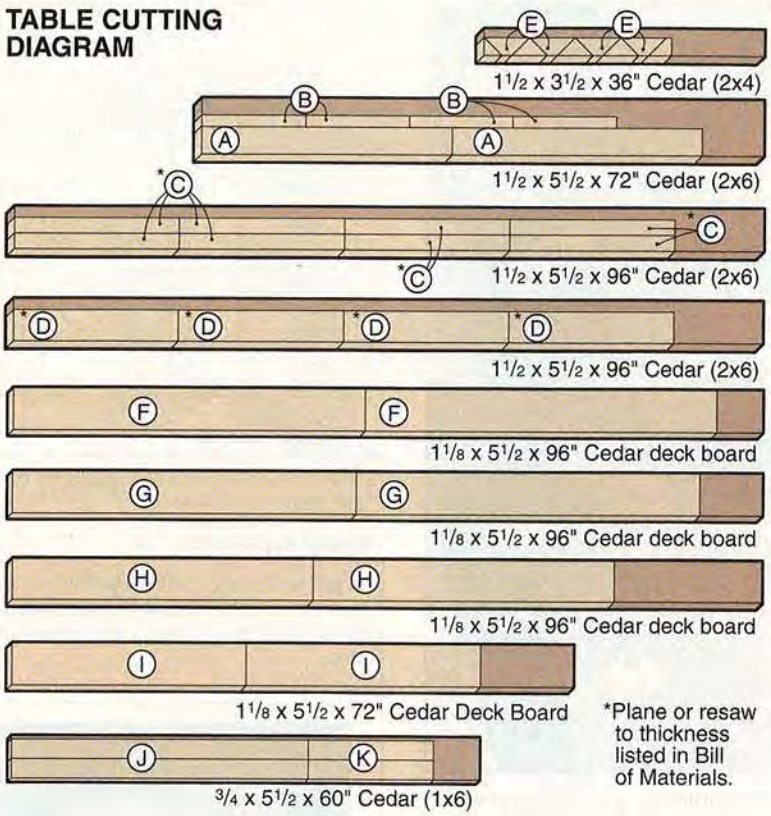


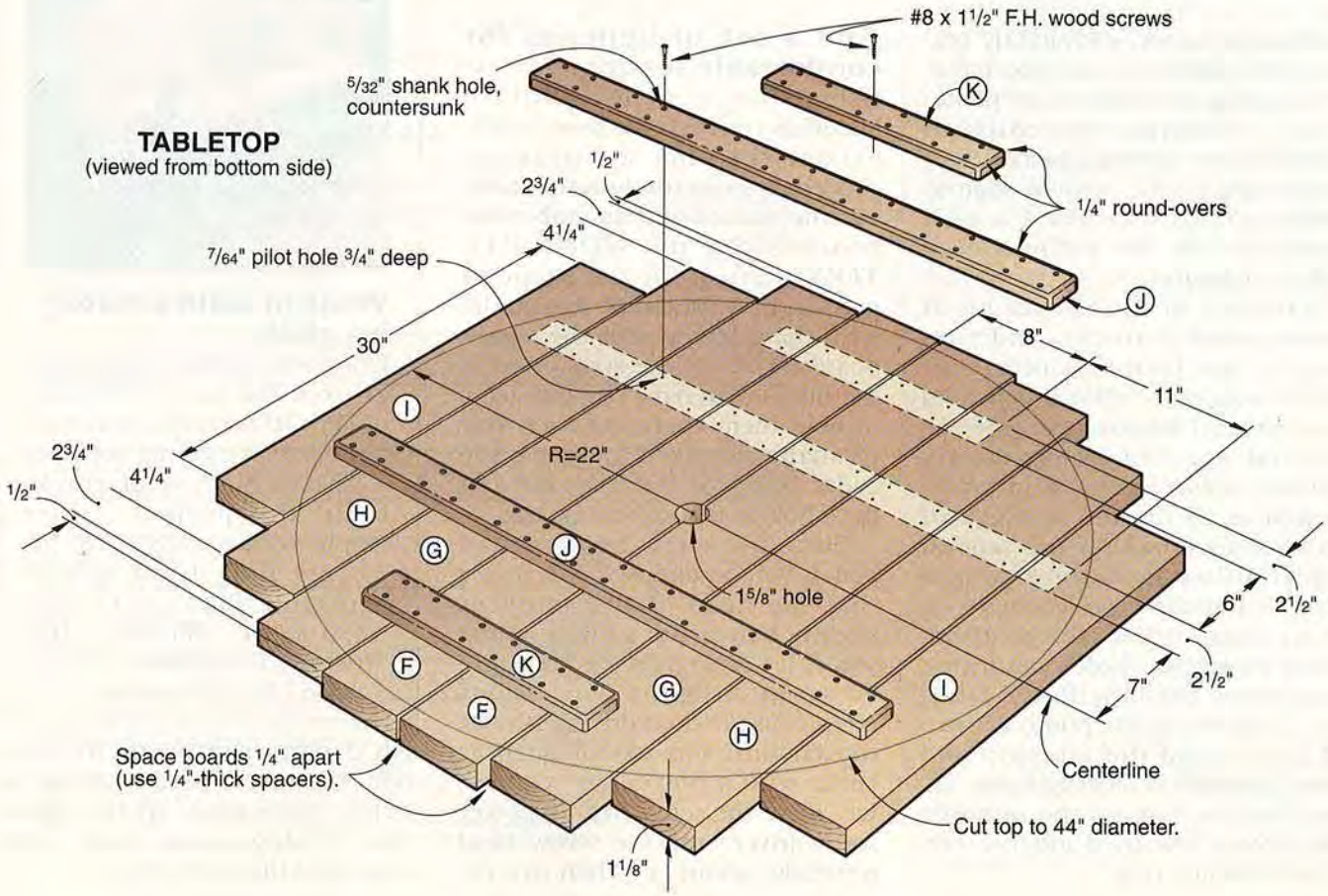
TABLE CUTTING DIAGRAM
E E
1½ x 3½ x 36" Cedar (2x4)
B B A A
1½ x 5½ x 72" Cedar (2x6)
*C *C *C
1½ x 5½ x 96" Cedar (2x6)
*D *D *D *D
1½ x 5½ x 96" Cedar (2x6)
F F
1⅛ x 5½ x 96" Cedar deck board
G G
1⅛ x 5½ x 96" Cedar deck board
H H
1⅛ x 5½ x 96" Cedar deck board
I I
1⅛ x 5½ x 72" Cedar Deck Board
J K
¾ x 5½ x 60" Cedar (1x6)
*Plane or resaw to thickness listed in Bill of Materials.

the face side, backing the stock to minimize chip-out. (We used a Forstner bit.)

4 With the face side *down*, dry-clamp the tabletop parts (F-I) and spacers in the configuration shown on the Tabletop drawing. Install a new ¼" spacer between the center pieces (F); you'll need it to support one of the trammel points in Step 5. Make sure the hole for the umbrella is still lined up. Glue (we used Titebond II) and screw the cleats (J, K) in place. Remove the clamps and turn the tabletop face side up with the spacers still in place.

5 Using trammel points, mark a 22" radius on the top side of the tabletop. Since the center of the tabletop is between the two center F pieces, center one of the trammel points on the spacer between the pieces.

Continued



With the base assembly centered on the bottom of the tabletop, glue and screw the two assemblies together.

6 Using a jigsaw, cut slightly outside the marked circumference. By leaving the spacers in place, you'll eliminate the chip-out between the tabletop pieces (F–I) when cutting the outside edge to shape. Sand (we used a belt sander) to the line to finish shaping the tabletop.

7 Chuck a ¼" round-over bit in your portable router, and rout the top and bottom outside edge of the tabletop. (We did this in two passes.) Remove the ¼" spacers, and sand the tabletop smooth.

8 Place a blanket on your workbench or on the top of a pair of sawhorses. Position the sanded tabletop face down on the blanket. Center the base assembly on the cleats on the table bottom. Drill mounting holes, and glue and screw the base to the tabletop as shown in the photo *above*.

9 Finish-sand the tabletop and base, and add a clear exterior finish. See the box on the *opposite* page for a few tried-and-true outdoor finishing tips.

Add a set of benches for comfortable seating

Using the benches' Bill of Materials (enough for four benches) and the same construction procedures you used on the table, cut the pieces and assemble the benches. See the *WOOD PATTERNS®* insert for the shape of parts A, B, D, F, and G. As you did with the tabletop, cut the bench boards (F, G) to the sizes listed in the Bill of Materials. Using spacers to hold them apart, cut each pair to shape.We used 2×4 and 2×6 cedar stock for the base and 1⅛" deck boards for the seat boards.

Since the screw heads on the bench will be exposed, we prefer that the head of the screw is slightly below the surface of the wood it's being driven through. To avoid unsightly depressions often caused when driving screws too far into soft woods such as cedar with a power screwdriver, we drive the screw with a power screwdriver until the screw head protrudes about ¼". Then, we finish driving the screw by hand until the screw head is about 1/16" below the surface of the wood. The 1/16" depression allows us to sand over the screw head.

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
FOUR BENCHES					
A feet	1½"	3"	10"	C	8
B top supports	1¼"	1½"	8"	C	8
C uprights	1¼"	5¼"	10½"	C	8
D bottom crsmbrs.	1½"	2½"	20⅞"	C	4
E top crsmbrs.	1½"	2½"	20⅞"	C	4
F* seat boards	1⅛"	5⅜"	32"	C	4
G* seat boards	1⅛"	5⅜"	32"	C	4

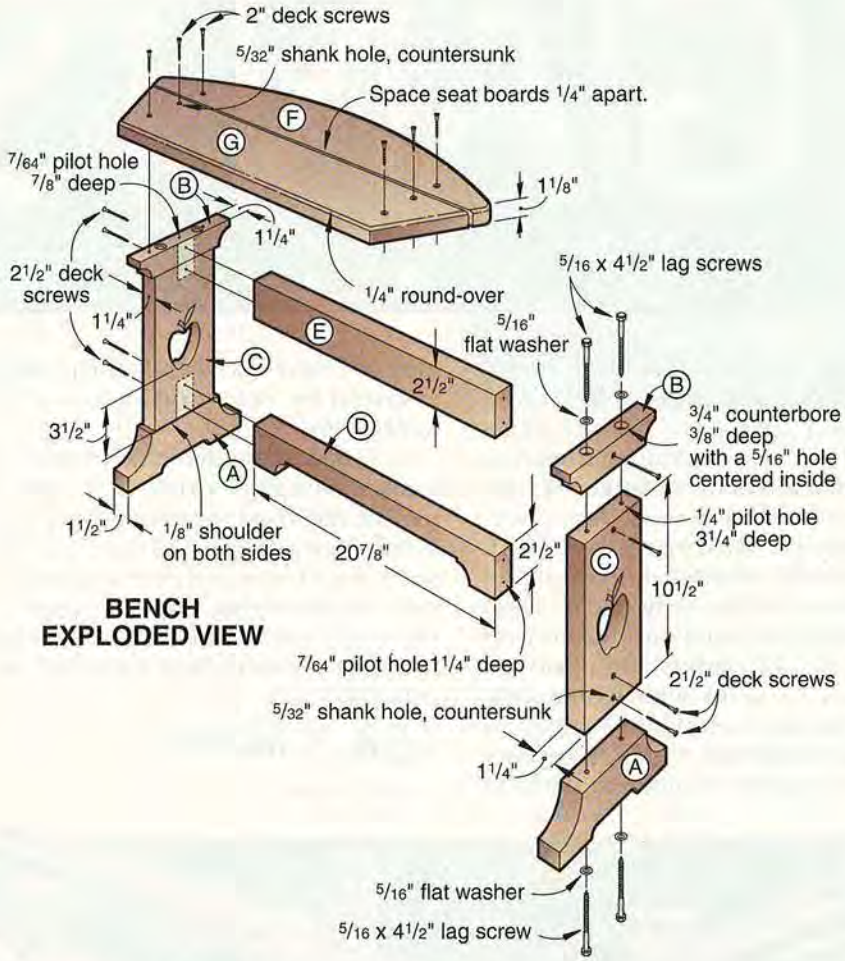
*Blank size, cut to shape according to the how-to instructions

Material Key: C–cedar

Supplies: 2" and 2½" deck screws, 32–5/16–x4½" lag screws with flat washers, red and green high-gloss exterior paint for apple cutout, clear exterior finish.

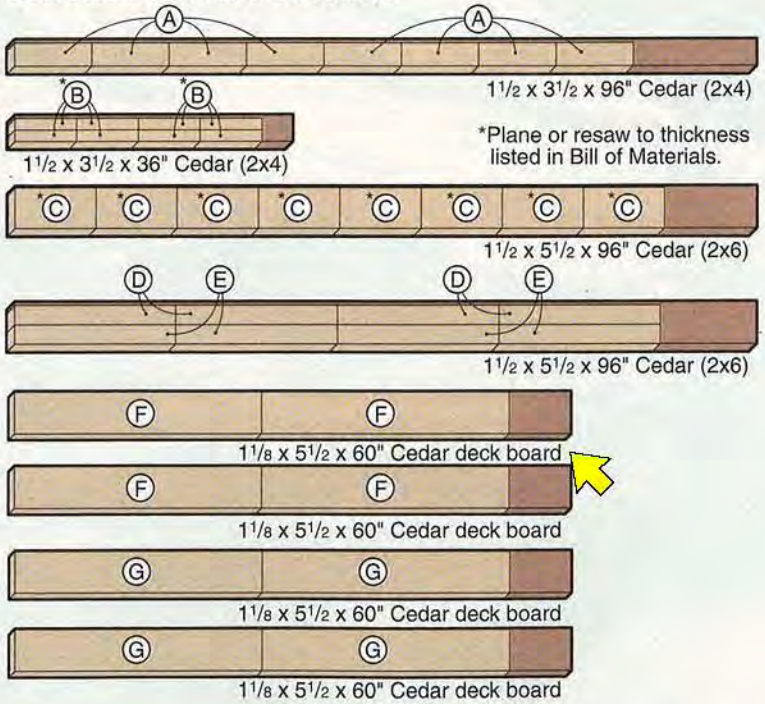
Want to build a matching glider?

Our comfortable country glider from the June 1995 issue of *WOOD* magazine was such a success, we've put together a WOOD PLAN® for you to build the project. Order Apple Glider, OFS-1028, for $12.95 ppd. from WOOD Magazine Plans, P.O. Box 9255-Dept WD-88, Des Moines, IA 50306. Or, call 1-800-572-9350 to order.



BENCH EXPLODED VIEW

BENCHES CUTTING DIAGRAM


A
A
1 1/2 x 3 1/2 x 96" Cedar (2x4)
B
B
1 1/2 x 3 1/2 x 36" Cedar (2x4)
*Plane or resaw to thickness listed in Bill of Materials.
C
1 1/2 x 5 1/2 x 96" Cedar (2x6)
D
E
1 1/2 x 5 1/2 x 96" Cedar (2x6)
F
1 1/8 x 5 1/2 x 60" Cedar deck board
1 1/8 x 5 1/2 x 60" Cedar deck board
G
1 1/8 x 5 1/2 x 60" Cedar deck board
1 1/8 x 5 1/2 x 60" Cedar deck board

How to maintain the beauty of redwood and cedar

Having built and finished several cedar and redwood outdoor projects, I've learned a lot about retaining that natural wood tone look. For starters, I've experienced that preparing the project for the finish is as important as the finish itself. To do this, I sand all parts with 100-grit sandpaper after machining and before assembly to remove the mill glaze that limits penetration of a finish. I use an orbital sander on the flat surfaces and a palm sander on the routed edges and ends. For stubborn areas, I'll resort to a belt sander fitted with a 60- or 80-grit belt. For weathered wood, I sand completely through the grey weathering to obtain the original color of the wood. Later, I'll resand any pieces that have become soiled or have gotten wet during construction. For a project like the table and benches, I'll finish-sand all the pieces with 150-grit before applying the finish. Sanding an entire project takes time, but I find the end results worth the effort.

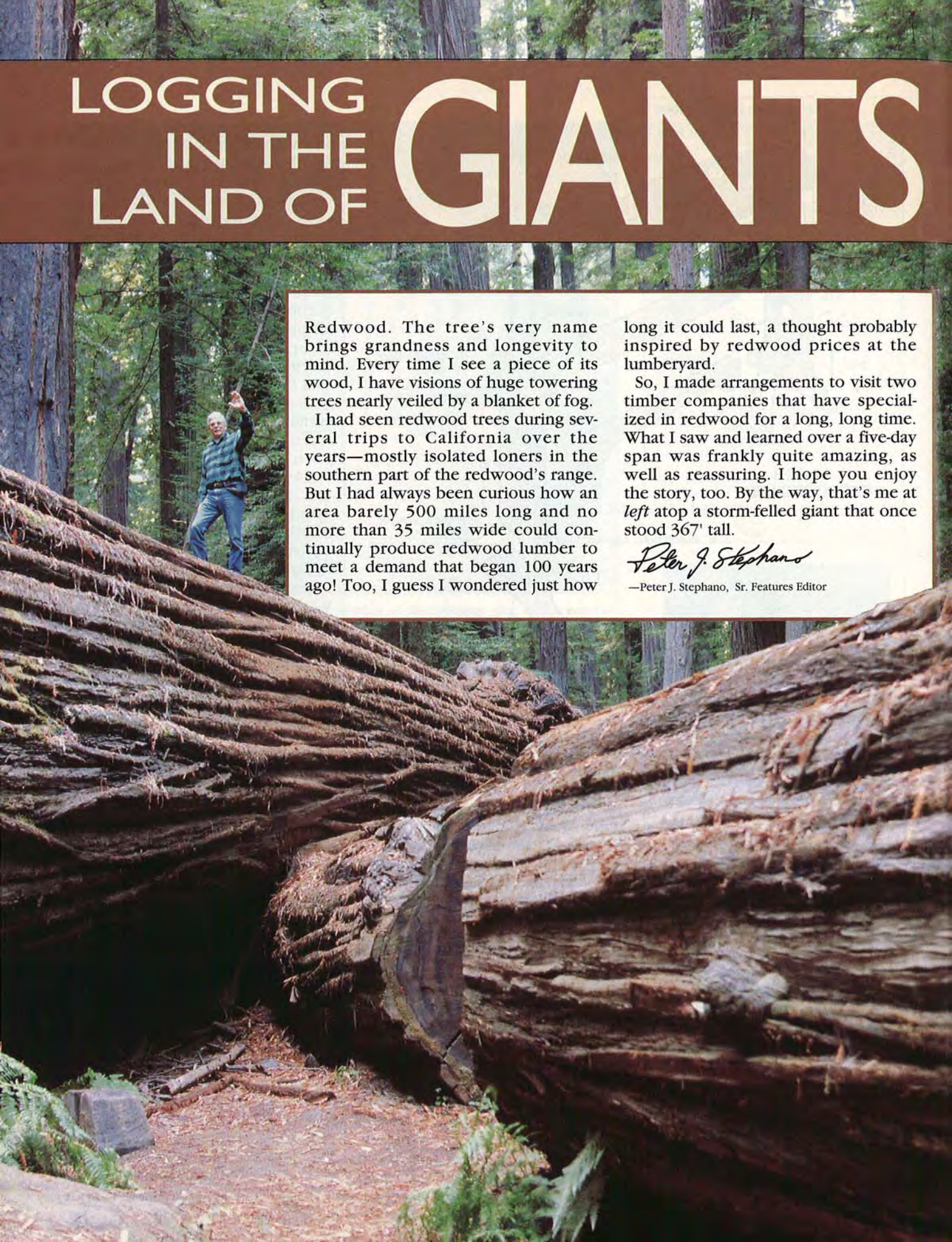
Depending on the size of the project, I either brush-on or use a paint roller to roll-on two coats of Flood's CWF-UV Penetrating Sealer. The sooner you can do this after sanding, the better. Left unfinished, the wood will begin to weather within days, and a rain can really darken the wood. I put the finish on evenly, brushing out any runs. Once a year, I smooth the surface with Scotch-brite pads, and apply another coat of finish. A soiled surface wipes clean with a cloth and soap and water. For more information on CWF-UV Penetrating Sealer, call Flood's deck care hotline at 800/321-3444.

Marlen Kemmet

Marlen Kemmet
Senior Editor/How To

Written by Marlen Kemmet Project Design: Jim Downing Photographs: King Au Illustrations: Kim Downing; Lorna Johnson

LOGGING IN THE LAND OF GIANTS



Redwood. The tree's very name brings grandness and longevity to mind. Every time I see a piece of its wood, I have visions of huge towering trees nearly veiled by a blanket of fog.

I had seen redwood trees during several trips to California over the years—mostly isolated loners in the southern part of the redwood's range. But I had always been curious how an area barely 500 miles long and no more than 35 miles wide could continually produce redwood lumber to meet a demand that began 100 years ago! Too, I guess I wondered just how long it could last, a thought probably inspired by redwood prices at the lumberyard.

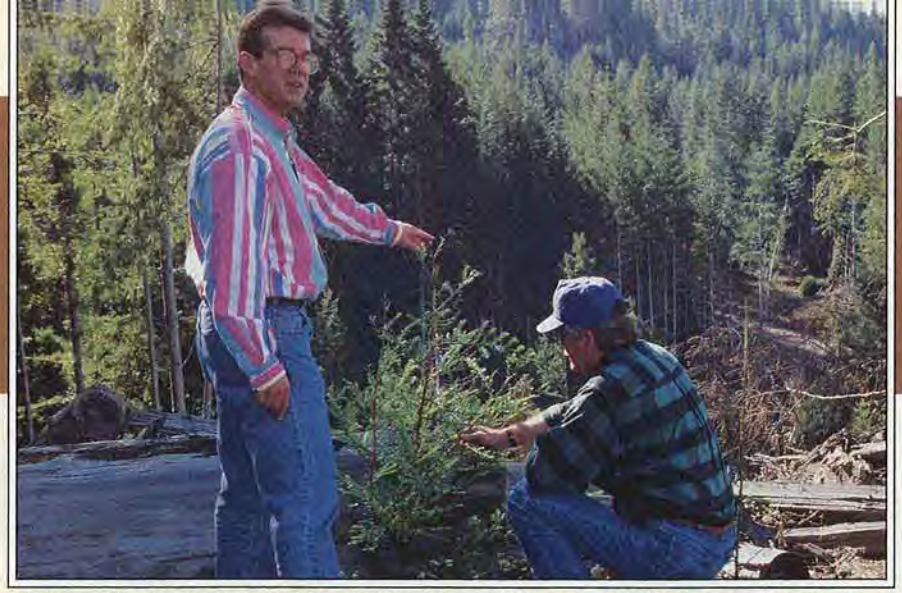
So, I made arrangements to visit two timber companies that have specialized in redwood for a long, long time. What I saw and learned over a five-day span was frankly quite amazing, as well as reassuring. I hope you enjoy the story, too. By the way, that's me at *left* atop a storm-felled giant that once stood 367' tall.

Peter J. Stephano

—Peter J. Stephano, Sr. Features Editor

Print this article

The coast redwood only grows in a long, narrow, mountainous strip of northern California. Here's a look at this famed tree, the people who nurture and harvest it, and how they go about ensuring its future.



At Strong's Creek Overlook, near Scotia, California, Pacific Lumber Company's resource manager, Tom Herman, points out the sprouting redwoods after a timber harvest. Law requires the site to be fully restocked within five years.

Scotia, California, some 250 miles north of San Francisco, remains as probably the last "company" town in America. It was built—mostly of local redwood and Douglas fir—before the turn of the century by the Pacific Lumber Company to provide housing, shopping, a school, a meeting hall, a recreation facility, and other amenities for its employees. Even today, a fog-horn whistle atop the main sawmill in town blasts reminders of when to leave for work, stop for lunch, return to work, and call it a day.

Of course, Pacific Lumber Company (PALCO) employees aren't required to live in Scotia (there aren't enough houses for the 1,200 of them anyway). But the fact that the town still exists, even thrives, indicates how long-term the company's commitment to redwood was and still is.

In fact, throughout the spectacularly beautiful Redwood Empire—especially Humbolt and Del Norte counties—runs a vein of permanence. No doubt because the people there always have been anchored to the coast redwoods, the ancient giants that continue to provide a great percentage of them with a livelihood.

The redwoods: a history of persistence

The coast redwood (*Sequoia sempervirens,* the only commercial species of redwood) grows in a strip of California coast that runs from about the Oregon border to Monterey County south of San Francisco. The area encompasses some 1.74 million acres, and rates as the most productive forest land in the United States. (About 255,000 acres of coast redwood forest is permanently preserved in state, county, regional, and national parks. Timber companies own 52 percent of the privately held redwood lands.)

As the dominant species, redwood overshadows Douglas fir and grand fir and the other trees that fall in the forest mix. That's especially true north of the Mendicino County line where mountains nudge the ocean and fog moisturizes the forests. There, redwoods 300' tall aren't uncommon, and an acre of growing trees easily can add 1,000 board feet of volume in a year. In 30 years, a redwood can grow 130' tall, making the species one of the fastest-growing softwoods known.

The first settlers in this part of California learned a lesson in how determined redwoods are to grow. "One of the most unique things about redwoods is that they sprout from the stump and grow a new tree, besides having cones that shed seeds," explains Henry Alden, the timberlands manager for PALCO and a professional forester. "And there's no difference in the tree quality, no matter how they got started. Pioneers around here tried to get rid of the redwood so that they could grow grass for grazing, but the forest kept coming back. Why, you have to dig the stump out of the ground before a redwood will quit sprouting!"

Henry and Tom Herman, PALCO's resource manager (also a forester) walk from the truck to point out one of the many 8"-high redwoods coming up through the debris of a recently logged tract. They explain how their company focuses on high-quality redwood products, such as vertical-grain architectural stock and patterned siding, which requires the fine grain of slow-grown trees.

"We have 200,000 acres of timberland, of which about 10 percent is virgin old growth," says Tom. "The rest is 70- to 90-year-old second growth resulting from the cuts made during the early part of this century. And we primarily harvest the redwoods by a series of partial cuts.

"Here's how it works: If we started with an acre of 100 young, growing trees, we'd thin them down to 50 trees when they reached 50 years old. This increases the growth potential of the remaining trees. Then, at age 70, we would cut to leave 10-12 trees per acre. Then, at 90 years, we would come in and log those residual trees. In the meantime, there's natural regeneration of a new stand. With this silvicultural sequence, we are producing larger trees than our competitors that will provide the higher-grade, clear products that PALCO is known for."

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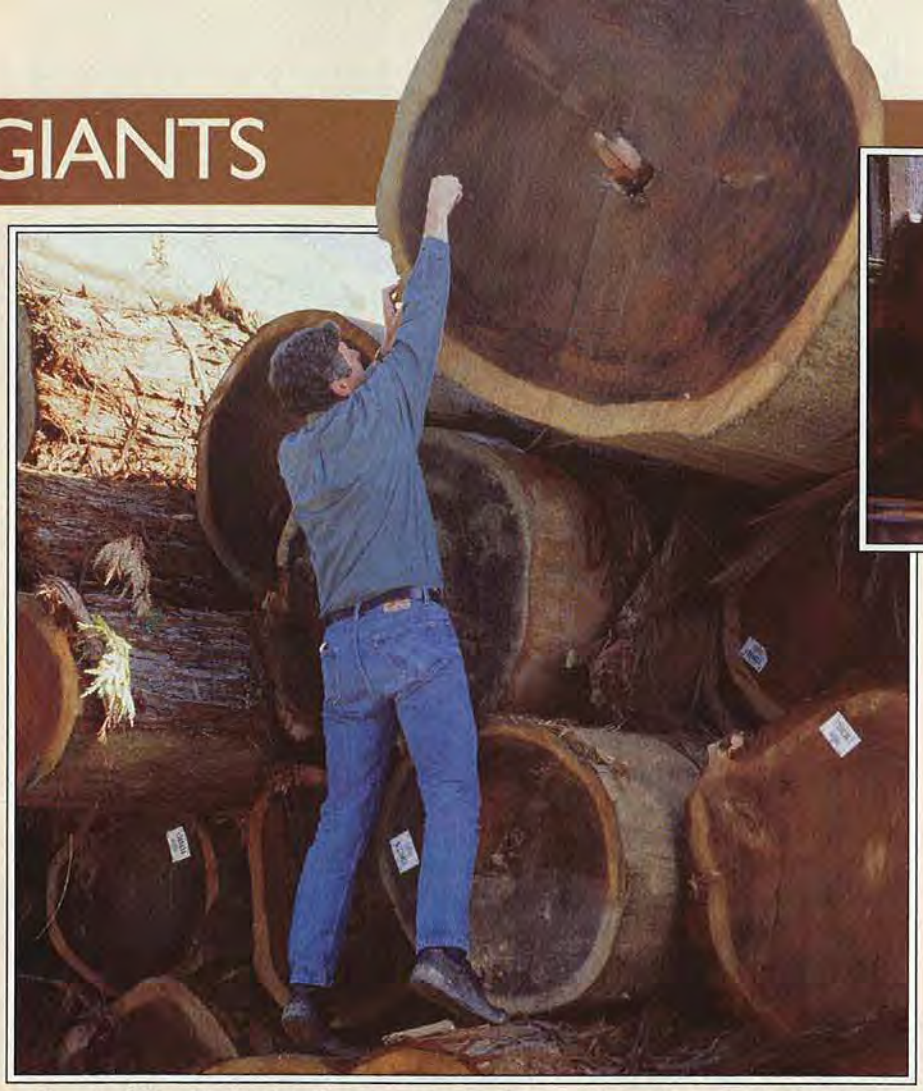


Henry Alden, Pacific Lumber Company's timberland manager, indicates the narrow growth rings of a 90-year-old redwood. It and the other older-growth logs in the yard will be sawn for vertical-grain lumber and a variety of high-end products.

A 92"-diameter log flies past the headsaw at Pacific Lumber Company's old-growth Mill B at Scotia, California.

Under the regulations of the California Forest Practice Act, land that has been logged must be fully restocked with growing trees within five years. To Henry and Tom, that means seeing to it that any natural regeneration of the redwoods—through seeding and stump-sprouting—is supplemented by planting. And on the average, PALCO plants 500,000 trees a year.

But logging and forestry in redwood country isn't as simple as it sounds. "We operate under the most restrictive forest practice regulations in the country," Tom comments. "Our cuts are usually limited to 30 acres, and before we can harvest we have to prepare a comprehensive analysis of the environmental impact—how it affects such things as stream quality, erosion, and wildlife. In some cases, that has meant a document two inches thick that took years to prepare and cost $30,000!"

"The impact is the rising cost of lumber," adds Henry. "But logging replicates the natural process, and if we do it right, we grow better trees and the environment and wildlife benefit, too." (See *page 76* for "An endangered species thrives among the redwoods.")

Maximizing production of the redwood resource

About 25 miles north and a bit inland from Scotia lies Korbel, headquarters for Simpson Timber Company, a forest-products company a bit unlike others in the redwood region. Although its purpose is to produce redwood products, too, this operation goes about it in a different manner.

"We're probably the most aggressive forest managers in terms of capitalizing on the productivity of the land base," says David Kaney, Simpson's vice-president and general manager. "Behind that is our basic operating strategy of even-age management through clearcutting. Redwood and Douglas-fir grow more quickly in open sunlight, so our harvest technique is clearcutting, followed by planting and intensive treatment to make sure that a site is fully stocked. We try to get as much as we can get out of every acre."

That forest management philosophy means that unlike PALCO's penchant for older redwoods, Simpson harvests trees when they turn 50. This young, less tightly-grained wood goes for decking and other construction. And their 380,000 acres of timberland produces a lot of wood.

"Right now, we're harvesting about 100 million board feet a year, and our lands are growing about 150 million board feet a year," comments Bill Houston, area forester for Simpson. "Both the growth and the harvest over the next 20-30 years will increase to the point where the sustained-yield capacity of this land, under good management, will be somewhere between 250-300 million board feet per year. We can double and even triple our output and growth while continuing to protect the wildlife habitat. Our people have the ability and knowledge to actively manage the tim-

In PALCO's manufacturing plant, workers prepare a vast selection of vertical-grain redwood building products for shipping.

Like propagating houseplants, forestry researchers at Simpson Timber Company's nursery clone superior redwood trees for planting by snipping branches and rooting the cuttings in jars. By repeating the process, a single 70-year-old redwood tree can be replicated 100 times or more.

berlands from a scientific base." That scientific base includes a high-tech computerized inventory and analysis of the timberlands.

"The Geographic Inventory System (G.I.S.) incorporates satellite images of our lands," says Bill. "But our crews actually gather physical, on-site data, such as measuring trees, every day to feed into the system. This gives us the ability to take cover-type information and make growing estimates for an area as small as 20 acres. We can tell how much volume will be there in the year 2,000." Simpson's neighbor to the south, PALCO, also relies on data from a similar G.I.S. system to manage their forests. At both companies, managing for the future includes the care and nurturing of the northern spotted owl and other species (see *page 76*). But at Simpson, plant genetics is an important part of the picture.

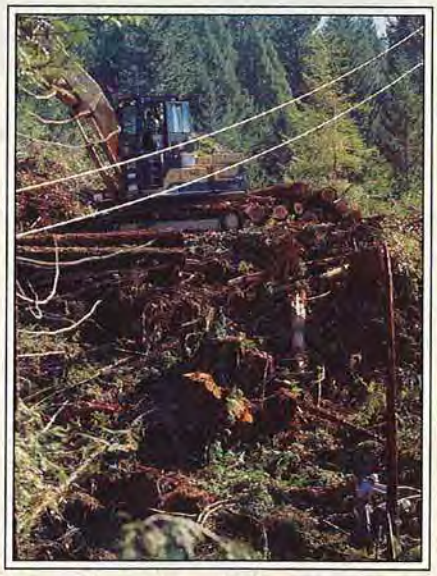
Super trees from the forestry lab

"Here in our nursery, we have developed practices that go above and beyond those normally needed to grow trees," states research forester Mark Diegen. Mark stands in the corridor of the laboratory at Simpson's tree nursery near Korbel, California. He explains the normal practice of developing redwood seedlings, which amounts to randomly gathering seed cones in the forest, then germinating the seeds and nurturing them until planting time. Then, he goes on to detail the process at Simpson.

"We rely on genetics to try and improve our trees," he says. "We pick the best trees at every type of site that we own to collect seed from. Next we grow those trees with the desirable characteristics we want to an age where we can crossbreed them for a second generation of superior specimens. And we keep statistical data on all the crossbreeding. That's one of our methods."

Their second tactic might have been inspired by *Star Trek*. "It's called cloning," comments Mark. Visible through the window behind him are rows upon rows of shelves containing hundreds of glass jars. In each jar are several tiny trees (see photo *above*).

"We find superior trees on our sites, cut branches from them, then sprout the cuttings in the laboratory." Because of redwood's tenacious sprouting ability, each cutting that grows into a little plant can be recut, sprouted, recut, and sprouted again. "The results are what we call 'stecklings.' They look like seedlings, but they come from tissue culture—pure replication. We're not adding or taking away from the genotype [original tree]. But it will eventually bring the cost of the stock for replanting down. Of course, we rank these stecklings, too, and replicate the top ones for another generation."



On a clear-cut of Simpson Timber Company land near Korbel, California, a swing yarder brings young-growth redwood logs up the slope via a skyline of steel cable. The site will yield about 40,000 board feet per acre.

Redwood logging: it's a transportation business

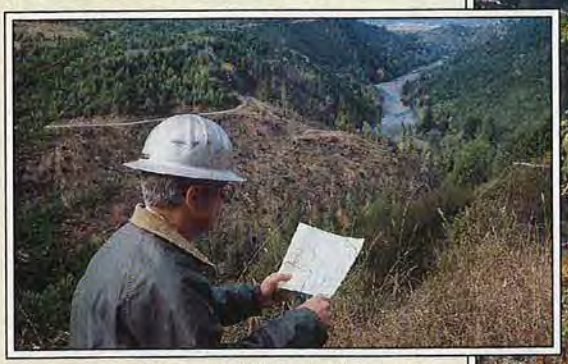
Combine the Pacific Lumber Company's annual production of about 300 million board feet of various redwood products and Simpson's 100 million per year and it's plain to see that they keep loggers busy. And no matter the harvest method, getting the wood out of the region's rugged terrain isn't easy.

According to timberland foresters like Simpson's Bill Houston and PALCO's Tom

Continued

GIANTS

Herman and Henry Alden, loggers in the Redwood Empire have two choices of how to yard, or clear, a site of downed trees. First, there's *tractor yarding*, where the crew uses a self-propelled vehicle to pull (skid) logs out of the woods. Such an operation moves more logs per day, but because the machines can result in accelerated erosion on steeper slopes, California logging laws limit them to a 20-acre area of clear-cut.



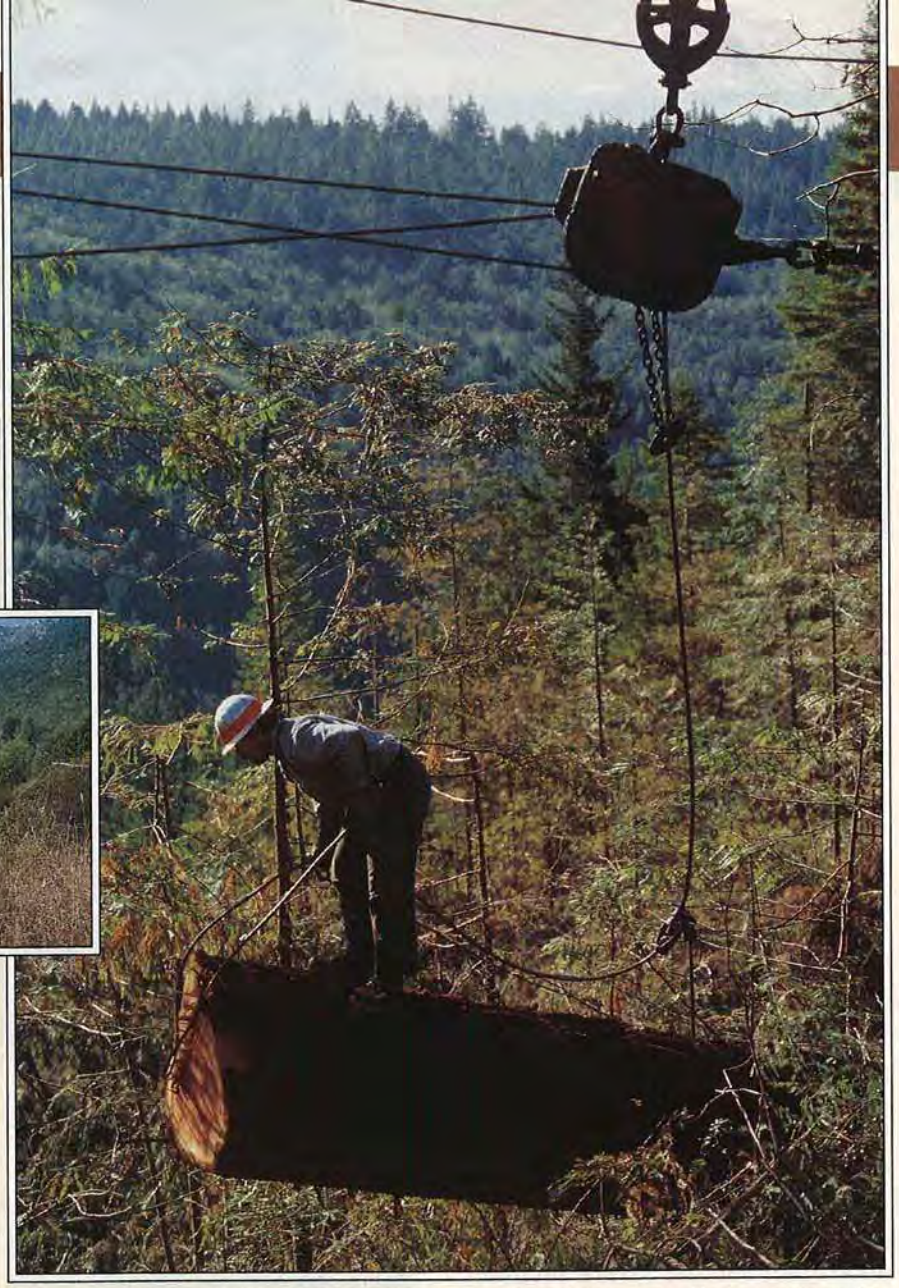
At an overlook of the Mad River, Simpson Timber Company forester Bill Houston surveys the regrowth of redwood trees following clear-cuts along the watershed.

The second choice is *cable yarding,* where a large crane called a swing yarder hauls one to three logs maybe 40' long up the slopes via a running skyline made of ¾" steel cable (see photo *above*).

"Swing yarders are good for yarding distances of 400-800 feet," notes Bill. "If you erect steel towers, you can run up to a 1½" diameter cable 1,500'. Each way, the crew has to plan out paths for the cable to follow through the swath to reach the most logs. Then there are the roads that the log trucks use to haul them out of the forest to consider. It comes down to logging being a transportation business. You have to balance location of the trees against the cost and environmental impact of building roads."

On a forest site harvested by clearcutting, the aftermath is a thick mat of slash—branches, limbs, and brush. To penetrate that in replanting would be impossible. That's why you'll see fires burning in the redwood region each spring and fall. As Bill explains, "Fire simulates a natural disturbance, and prepares the ground. Controlled burning also releases nitrogen to stimulate plant growth. We burn a site the first fall or spring after logging."

Historically, burning isn't new to the redwood forest. Before the advent of man, lightning-caused fires periodically scorched the redwoods. When homesteaders arrived, they attempted to burn away the forests to make room for agriculture. Today, redwoods grow in these burned-over areas.



Hooktender Dave Circe sets the choker on a redwood log. A yarding operation like this can run a steel cable 800' to yard logs, with little disturbance of the soil.

In the early days of redwood logging—to reduce the weight of the logs hauled by the small, short-line steam locomotives—crews felled the trees, then pried the thick bark from the trunks with iron bars. After packing any cracks or splits in the wood with mud to protect the trunk, they'd set the loose bark afire. When the fire had burned itself out, they sawed the logs into manageable lengths, yarded them, and hauled them out. Despite all of this, the vigorous redwood continued to thrive, as it does today.

Written by Peter J. Stephano
Photographs: Dan Sullivan

WOOD INDEX

CUMULATIVE INDEX FOR ISSUES 77–85

The next time you're looking for a project or feature story in issues 77 through 85, use this handy reference to help you find it fast. We kept it simple. For instance, when searching alphabetically for the story on a mission buffet, you'll find "Buffet, mission, 77:62–69." To locate the story, go to issue 77, page 62.

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WOOD MAGAZINE EXCLUSIVE

Print this article

A great way to dress up your projects

SCROLLSAW APPLIQUÉ

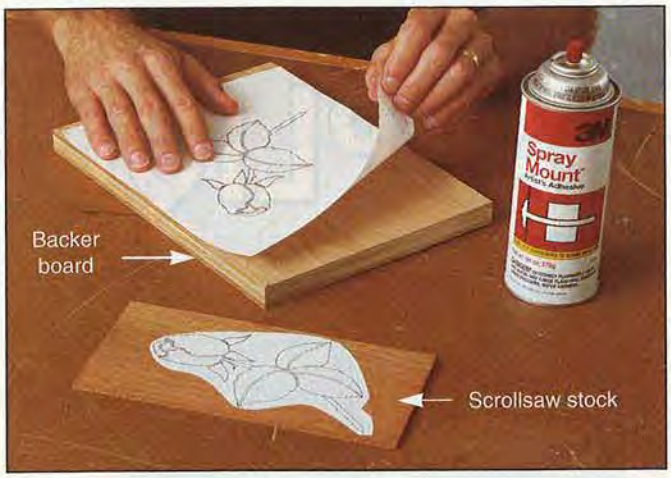
Would you like to add a hand-carved look to your projects without having to master the art of carving first? Well, your search has ended.

Our Design Editor Jim Downing has come up with a scrollsaw appliqué technique that lets you easily apply intricate, three-dimensional details to any flat wooden surface. And you can use this clever technique to recreate any pattern you can cut on a scrollsaw. All you have to do is turn the page and follow along with our simple, step-by-step instructions.

Continued

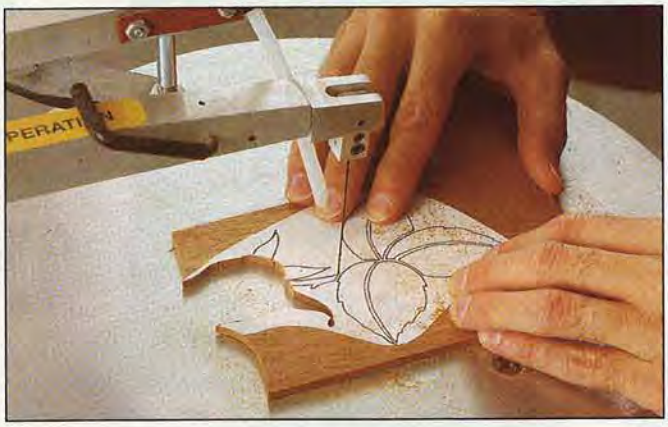
Here are a few examples of what you can do with our scrollsaw appliqué technique. The wheat stalk on the oak baluster post stands out crisply with a whitewash finish. The pattern on the cabinet door illustrates how paint can highlight the appliqué. And the small rose on the mirrored chest shows the contrast between light and dark woods.

8 EASY STEPS TO SUCCESSFUL SCROLLSAW APPLIQUÉ



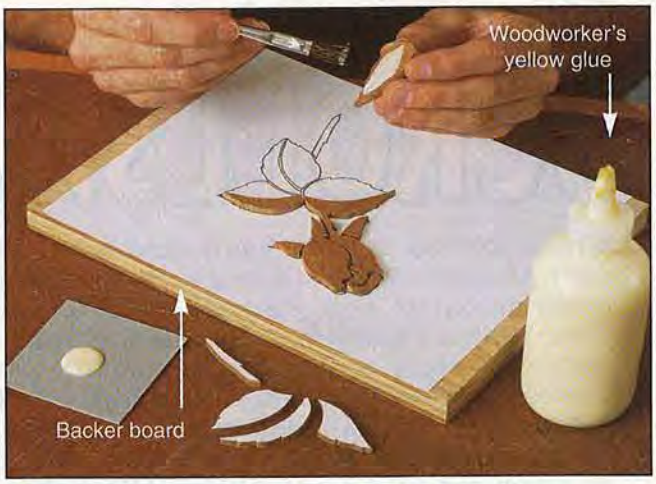
1. Adhere your patterns to the workpieces

Make two reverse-image patterns of your design. Do this by tracing the pattern with translucent paper and flipping the tracing. Otherwise, your final appliqué will be a mirror-image of your original design. Apply one pattern to a piece of ⅛"-thick scrollsaw stock and the other to the backer board—a smooth, flat piece of ¾" plywood large enough to hold the pattern.



2. Scrollsaw the appliqué

With a scrollsaw, cut out the pieces of the appliqué pattern from the ⅛" stock. After you cut each piece, peel off the paper and lightly sand any ragged edges. We found it useful to keep the cut pieces organized on the bench in the same layout as the finished pattern to avoid confusion or mixing up small parts.



3. Glue the pieces on the backer board

After you've cut and cleaned up all the pieces, grab a bottle of yellow woodworker's glue and a small glue brush. Working with one piece at a time, apply a very light coat of glue to the underside of the stock. Then press the piece down firmly in its matching location on the paper pattern adhered to the backer board.

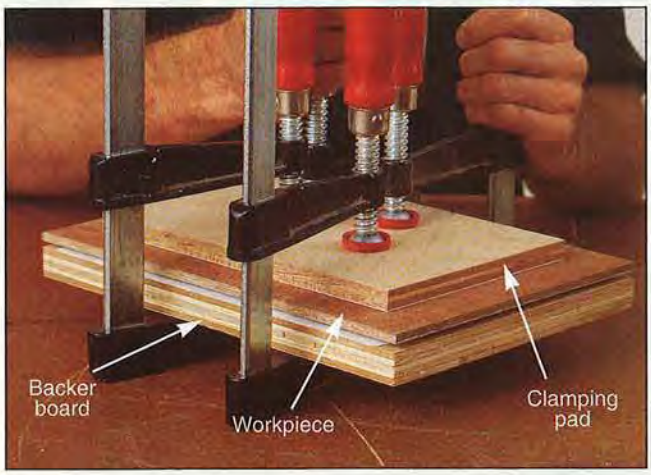
4. Apply glue to the tops of the pieces

Once the glue holding the scrollsawn stock to the backer-board pattern dries, lightly sand the tops of the pieces to remove any residue from the spray adhesive. Then, brush a thin lay of white woodworker's glue on the top surface of the pieces. (The white glue gives you a bit more working time.)

Where to get scrollsaw appliqué patterns

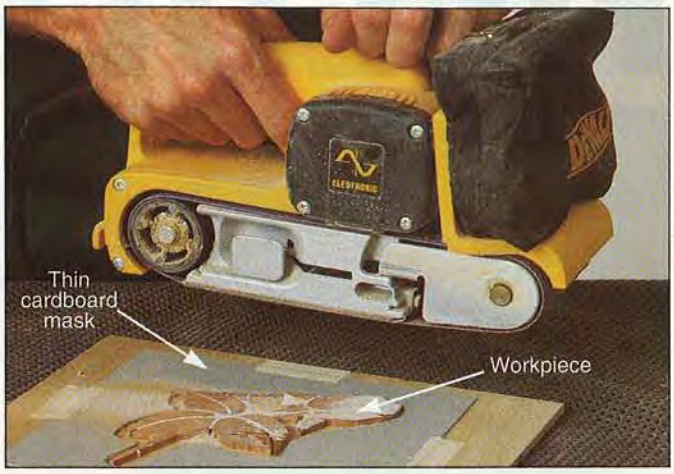
One of the big advantages of this technique is that any pattern you can copy onto paper and scrollsaw will work as an appliqué pattern. For a good source, check out the clip-art books available at art-supply stores.

Precut stencils also make good pattern material. With these you need only trace the shape of the pattern on the scrollsaw stock and a piece of paper adhered to the backer board. This eliminates the chore of photocopying and tracing reversed patterns, and it makes a lot of sense when you have a pattern you intend to repeat frequently. We used the "Fuschia" stencil from StenSource International for the painted flower design on the cabinet door



5. Clamp the appliqué to the workpiece
Now, align the applique with the workpiece that will receive it, and clamp the two together. To avoid glue marks on the workpiece, take care not to let the glued surface of the appliqué slide around on the workpiece. Place a flat plywood clamping pad on the back side of the workpiece to evenly distribute the clamping pressure.

6. Separate the workpiece and backer board
Allow the glue to dry fully (about 24 hours), and then carefully pry apart the workpiece and the backer board with a putty knife. Slip the putty knife between the paper and the backer board, not between the paper and the workpiece. Then, peel the paper off the appliqué.



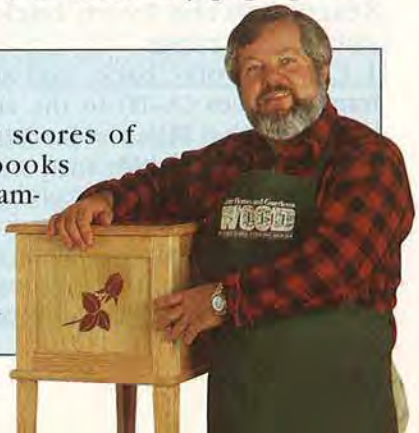
7. Reduce the thickness of the appliqué
Cut an opening about ⅛" bigger than the appliqué pattern out of a piece of cardboard. We used a mat board about 1/16" thick. Cereal-box cardboard also will work. Use this as a protective mask by taping it to the workpiece. Then, with a belt sander, sand the appliqué flush with the surface of the cardboard mask, taking care not to gouge the workpiece.

8. Round over the edges
To finish up and create a sculpted or carved look, round over the edges of the appliqué by hand with 150-grit sandpaper. With a light touch, you can also use a flap sander on this step. Work carefully around small or pointed pieces as these may pop up with rough handling.

on *page 53*. To order this company's stencil catalog ($2.50), write to: P.O. Box 220, Standard, CA 95373. Call 800/290-8921.

Last but not least, your local library has plenty of books worth investigating. Look for their scrollsaw pattern books. But also browse through the applied-arts section. There, with a little creative digging, you'll uncover scores of ideas for patterns in books about wrought iron, ceramics, and other crafts.

Written by Tom Jackson
Technical consultant: Jim Downing
Photographs: John Hetherington



Chair-side NEEDLECRAFT

You can keep sewing or knitting supplies stylishly close at hand with our handsome storage cabinet. Note that the split top allows you to put a lamp on the back portion and leave the front open for ease of access to yarns, needles, and thread. In addition, the cabinet interior provides lots of storage space and includes a convenient sliding tray.

Start with the front, back, and side frames

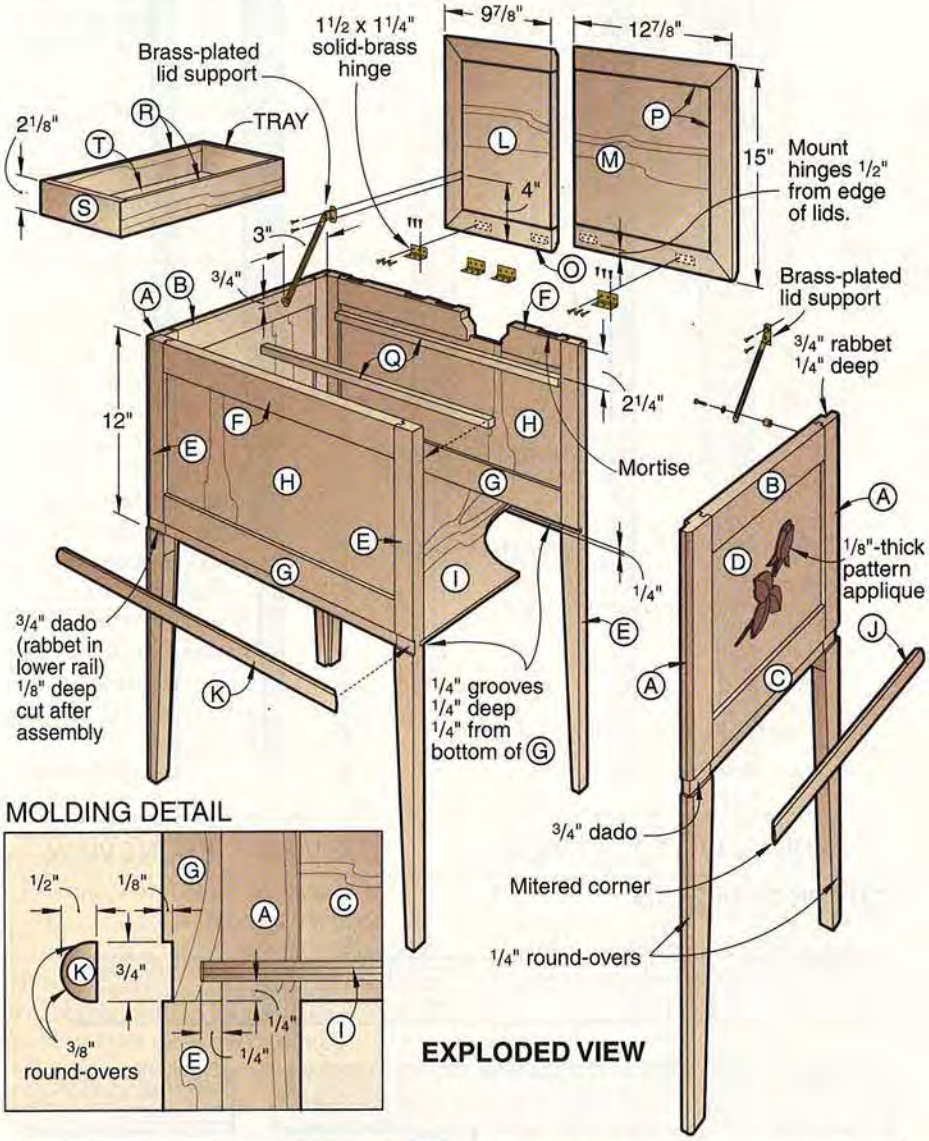
1 Cut the front-, back-, and side-frames pieces (A–H) to the sizes listed in the Bill of Materials. Using a pencil, lightly mark a part letter on each piece to match the letter on the Exploded View drawing and Bill of Materials. Since several of the machining processes are similar for the different pieces, it saves time to cut all these pieces to size now.

2 Rout ¼" stopped grooves ¼" deep and 12" long in the front and back frame legs (A) and side frame legs (E) *centered along the inside edge* of each leg where dimensioned on the Legs drawing. (As shown in the photo *at right*, we used our table-mounted router to rout the stopped grooves.)

3 Rout ¼" round-overs along the outside edge of each front and back leg (A).

4 Cut or rout a ¾" rabbet ¼" deep along the inside face of each front and back frame leg (A) where shown on the Frames and Legs drawings. The rabbet needs to be as wide as the thickness of the legs (E), so measure carefully before setting the depth of cut.

CENTER



MOLDING DETAIL

Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
FRONT & BACK FRAMES					
A legs	¾"	1¾"	27¼"	A	4
B top rails	¾"	1¾"	11"	A	2
C btm. rails	¾"	2½"	11"	A	2
D panels	¼"	11"	8¼"	AP	2
SIDE FRAMES					
E legs	¾"	1¼"	27¼"	A	4
F top rails	¾"	1¾"	19"	A	2
G btm. rails	¾"	2½"	19"	A	2
H panels	¼"	19"	8¼"	AP	2
TRIM AND BOTTOM PANEL					
I bottom	¼"	21"	13"	AP	1
J* end moldings	¾"	½"	14¾"	A	2
K* side moldings	¾"	½"	22¾"	A	2
LID					
L* rear top panel	¾"	11⅛"	7⅞"	LAP	1
M* front top panel	¾"	11⅛"	11"	LAP	1
N* panel center back	¾"	⅝"	13"	A	1
O banding blanks	¾"	1¾"	42"	A	2
P trim blanks	¾"	3⁄16"	42"	M	2
TRAY					
Q supports	½"	½"	18½"	A	2
R front/back	½"	2⅛"	12⅜"	A	2
S sides	½"	2⅛"	8"	A	2
T bottom	¼"	8"	12⅛"	AP	1

*Cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

Materials Key: A-ash, AP-ash plywood, LAP-laminated ash plywood, M-mahogany

Supplies: One left-hand and right-hand lid support (we used Brainerd brass-plated friction lid supports, part numbers L1085XC and R1085XC), four 1½x1¼" solid-brass hinges with mounting screws (we used Brainerd hinges and accompanying screws, part no. 7150XC), clear finish.

Use your table-mounted router fitted with a fence, stop, and straight bit to rout the stopped grooves.

(We used our router table fitted with a ½"-diameter straight bit and fence, and routed the rabbet in two passes for a cleaner cut.)

5 Mark the cutlines for the taper on each leg (A, E) where dimensioned on the Legs drawing. Using a taper jig or a bandsaw, cut the tapers. Sand the cut edges smooth to remove the saw marks.

6 Cut tenons on rails (B, C, F, G) to fit into the previously routed grooves in the legs (A, E). Cut scrap stock first to verify a snug-fitting tenon before cutting the required pieces.

Assemble each frame, and then join them together

1 Using the appliqué technique on *page 53* and the full-sized rose pattern at the end of this article, add the rose to the front-frame panel (D).

Continued

KNITTING CENTER

2 Dry-fit the front and back frames (A, B, C, D), and then the side frames (E, F ,G, H) to verify the fit of all the pieces. See the assembly configuration on the Frames drawing for reference. Then, glue each of the four frames together, checking for square.

3 To house the bottom panel (I) later, use a ¼" dado blade in your tablesaw. Now, cut a ¼" groove ¼" deep ¼" from the bottom edge of the bottom rails (C, G) on the *inside* face of each assembled frame where shown on the Exploded View and Frames drawings. To do this, run the top edge of each frame against the tablesaw fence to position the groove in the same exact location on each frame. This is important when assembling the frames later, and the grooves have to align.

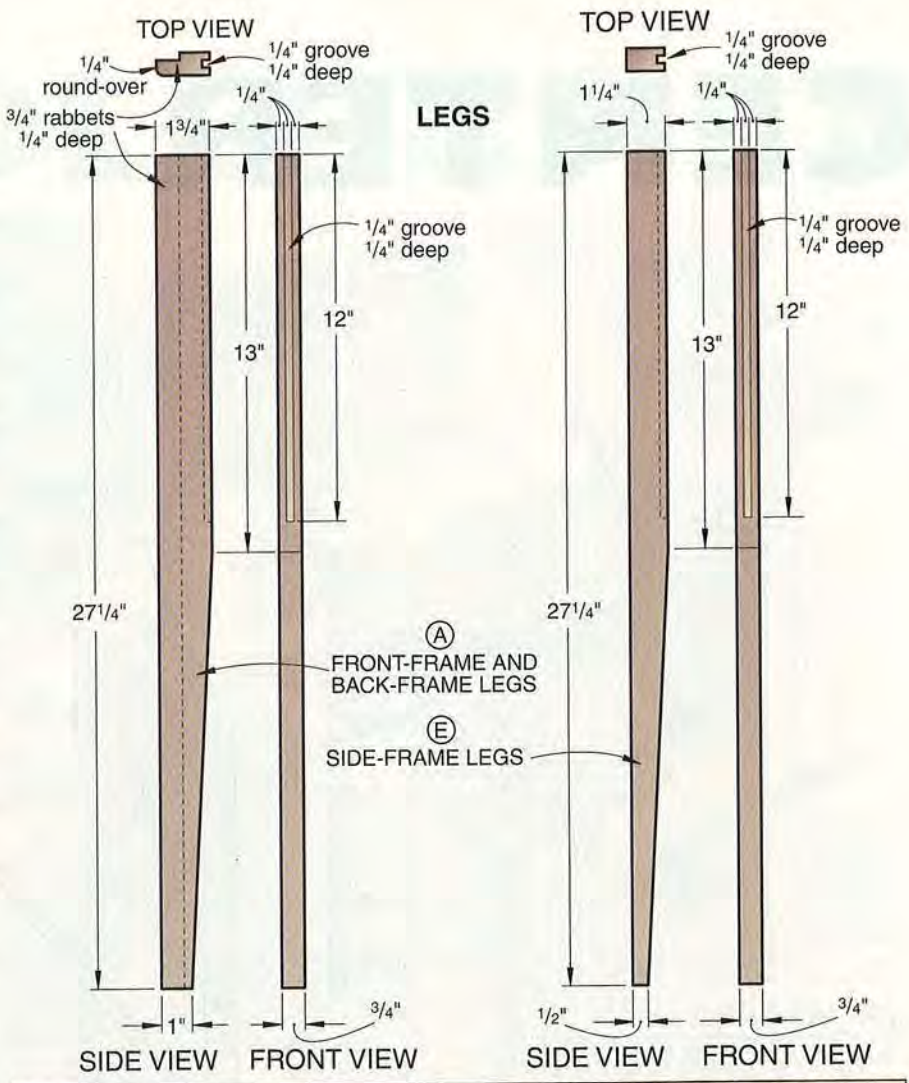
4 For housing the decorative molding pieces (J, K), cut a ¾" dado (a rabbet on the lower rails) ⅛" deep along the bottom edge of each frame where shown on the Exploded View and Frames drawing. As explained in Step 3, run the top edge of each frame against the fence for consistently placed dadoes from frame to frame.

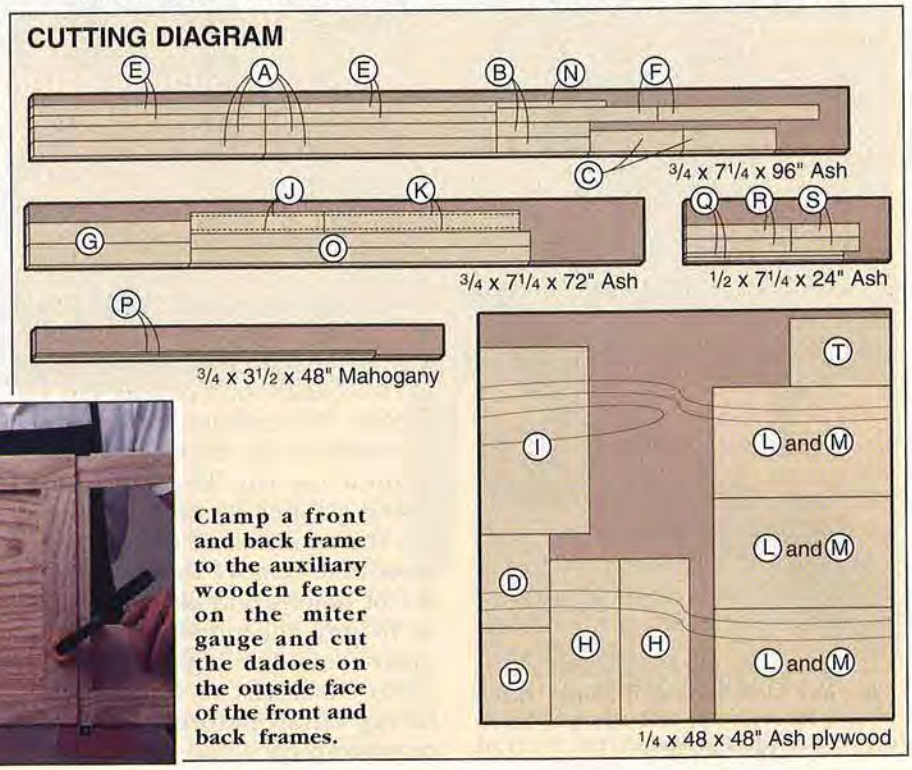
5 With the ends against the fence, clamp the front frame to your miter-gauge extension, and cut the dado on the outside face as shown in the photo below. Repeat for the back frame

6 From ¼" plywood, cut the bottom panel (I) to size.

7 Dry-clamp the four frames and the bottom (I) together to check the fit. To minimize glue clean-up when doing the actual assembly, place masking tape on the surfaces of the stock next to the mating joints. Glue and clamp the four frames together, keeping the dadoes and grooves aligned. Later, remove the masking tape with the glue dried to it.

Clamp a front and back frame to the auxiliary wooden fence on the miter gauge and cut the dadoes on the outside face of the front and back frames.



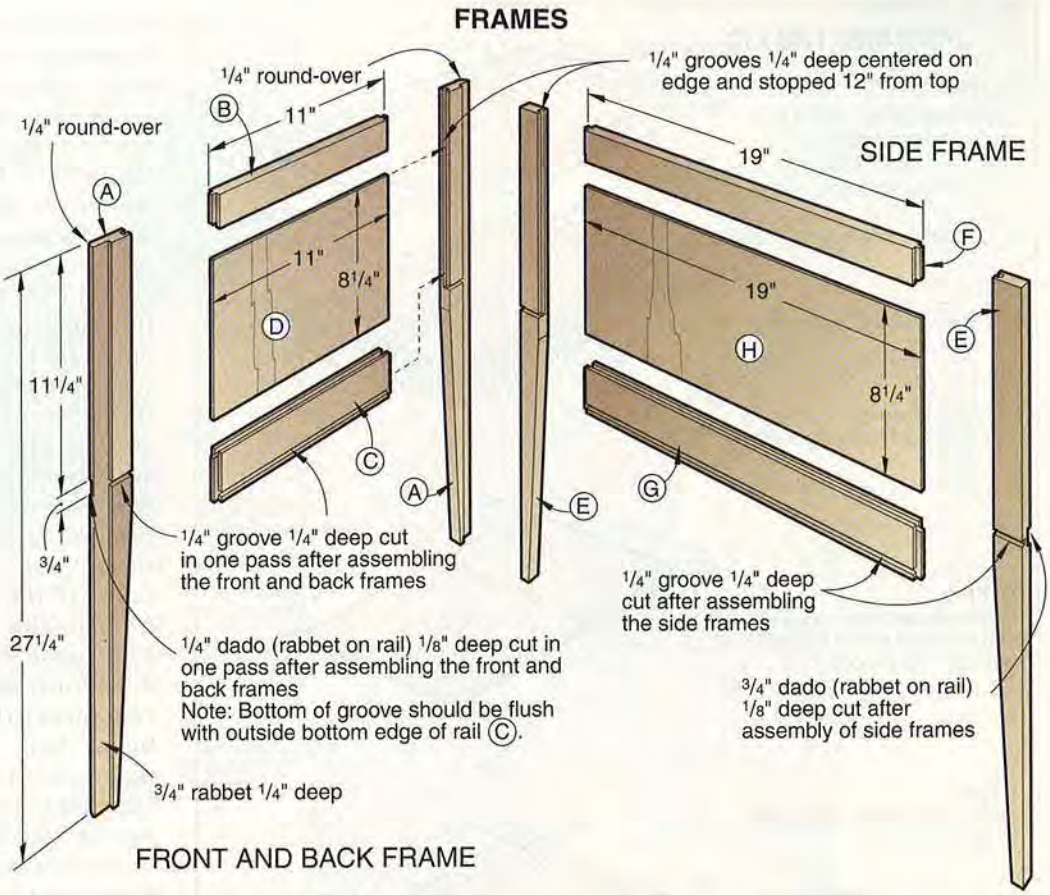


Add the decorative molding now

1 Cut a piece of ¾"-thick stock to 3×40" for molding pieces J and K. The thickness of the stock needs to be the same as the width of the dado on the outside face of the assembly. Rout ⅜" round-overs along both edges of the 3"-wide stock. Rip a ½" strip from each routed edge of the 3"-wide piece.

2 Miter-cut the molding pieces (J, K) from the ½"-wde strips just machined in Step 1, to fit into the dadoes in the base. Measure and cut carefully for snug fitting corners.

3 Glue and clamp the four ash molding pieces (J, K) in place. Remove excess glue immediately.

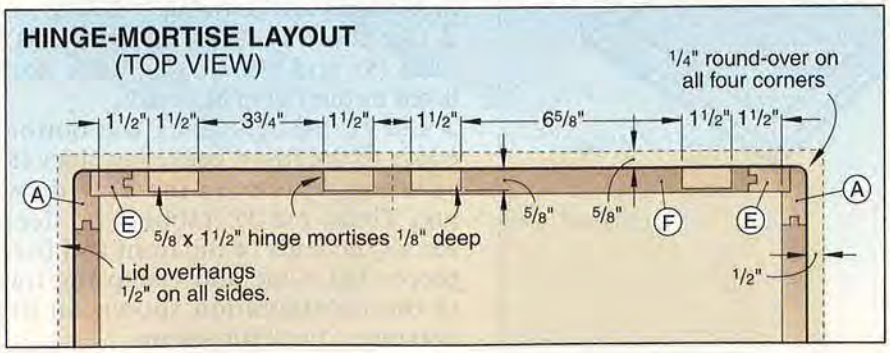

FRAMES
1/4" round-over
1/4" round-over
11"
11"
8 1/4"
11 1/4"
3/4"
27 1/4"
1/4" groove 1/4" deep cut in one pass after assembling the front and back frames
1/4" dado (rabbet on rail) 1/8" deep cut in one pass after assembling the front and back frames
Note: Bottom of groove should be flush with outside bottom edge of rail (C).
3/4" rabbet 1/4" deep
FRONT AND BACK FRAME
1/4" grooves 1/4" deep centered on edge and stopped 12" from top
19"
SIDE FRAME
19"
8 1/4"
1/4" groove 1/4" deep cut after assembling the side frames
3/4" dado (rabbet on rail) 1/8" deep cut after assembly of side frames

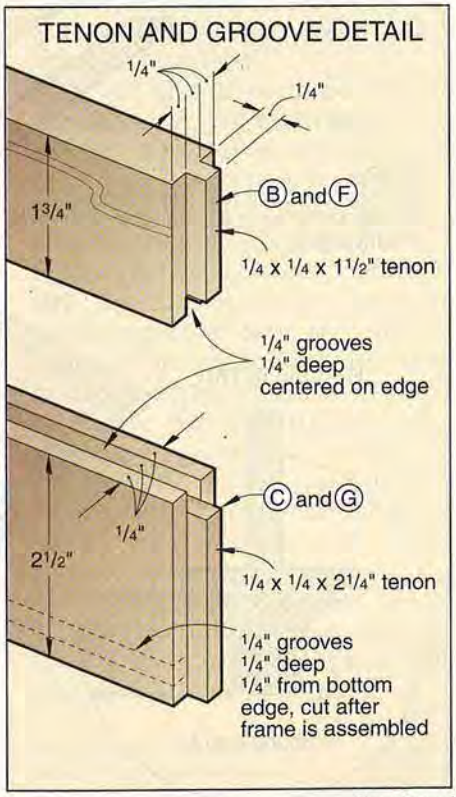
The two-part lid comes next

1 Hand-cut hinge mortises in the side rail (F) where shown on the Hinge-Mortise Layout drawing. The depth of the mortises needs to be the same as the thickness of both hinge leaves when the hinge is closed (ours measured ⅛").

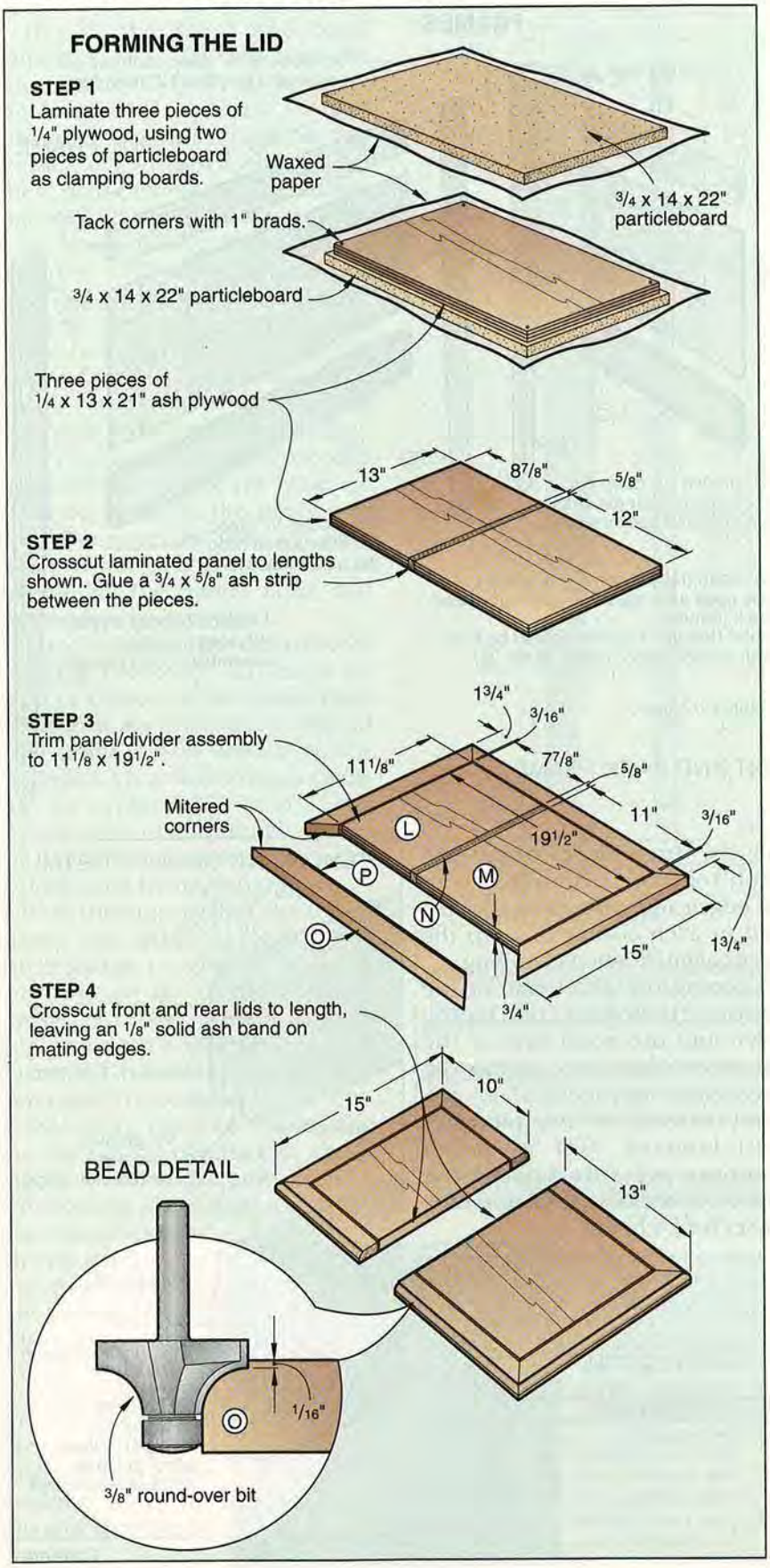
2 Cut three pieces of ¼" ash plywood to 13×21" to form a blank for lid pieces (L, M). Cut two pieces of ¾" particleboard or plywood to 14×22". As shown in Step 1 on Forming the Lid drawing, glue the three pieces of ash plywood together face-to-face with the edges and ends flush. Drive a brad in each corner to keep the pieces aligned when clamping.

3 Keeping the good side of the bottom plywood panel facing down and the good side of the top piece facing up, clamp the three glued-up pieces of ¼" plywood between the two pieces of particleboard. Get as much clamping pressure toward the middle of the setup as possible. Let set for 24 hours.




TENON AND GROOVE DETAIL
1/4"
1/4"
1 3/4"
B and F
1/4 x 1/4 x 1 1/2" tenon
1/4" grooves 1/4" deep centered on edge
C and G
1/4"
2 1/2"
1/4 x 1/4 x 2 1/4" tenon
1/4" grooves 1/4" deep 1/4" from bottom edge, cut after frame is assembled

Continued



4 Remove the lamination from between the particleboard. Joint one edge, place this edge against your radial-arm saw fence or your tablesaw's miter gauge, and crosscut the lamination 12" from one end where shown on Step 2 of the drawing.

5 Cut a piece of ¾"-thick solid ash to ⅝" wide by 13" long for the panel center (N). Trim it if necessary so it is the same exact thickness as the laminated lid panels (L, M). Since ¼" plywood measures a hair under ¼", the three pieces laminated together measure about ⅝". Glue the solid ash strip between the lid panels (L, M) where shown in Step 2 of the drawing. *Be careful to keep the top edge of the solid ash flush with the top edges of the plywood panels.*

6 Trim the lid center assembly to 11⅛" wide by 19½" long.

7 To form the banding for the lid, cut two pieces (O) of ¾" ash to 1¾" wide by 42" long. Cut two pieces (P) of ¾" mahogany to 3⁄16" wide by 42" long. Glue and clamp the two pieces edge-to-edge. Rout a bead along the edge of the banding where shown on the Bead detail accompanying Forming the Lid drawing.

8 Miter-cut the laminations to frame the lid center where shown in Step 3 of the drawing.

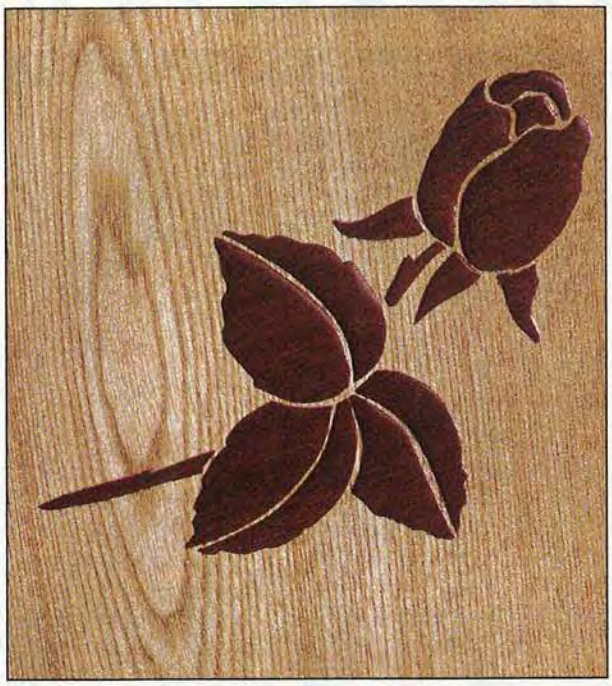
9 Crosscut the lid assembly twice, leaving you with one section 13" long and a second one 10" long. When crosscutting the lid, crosscut so the remaining strips from the panel center blank (N) are ⅛" wide each.

Add the tray and support cleats

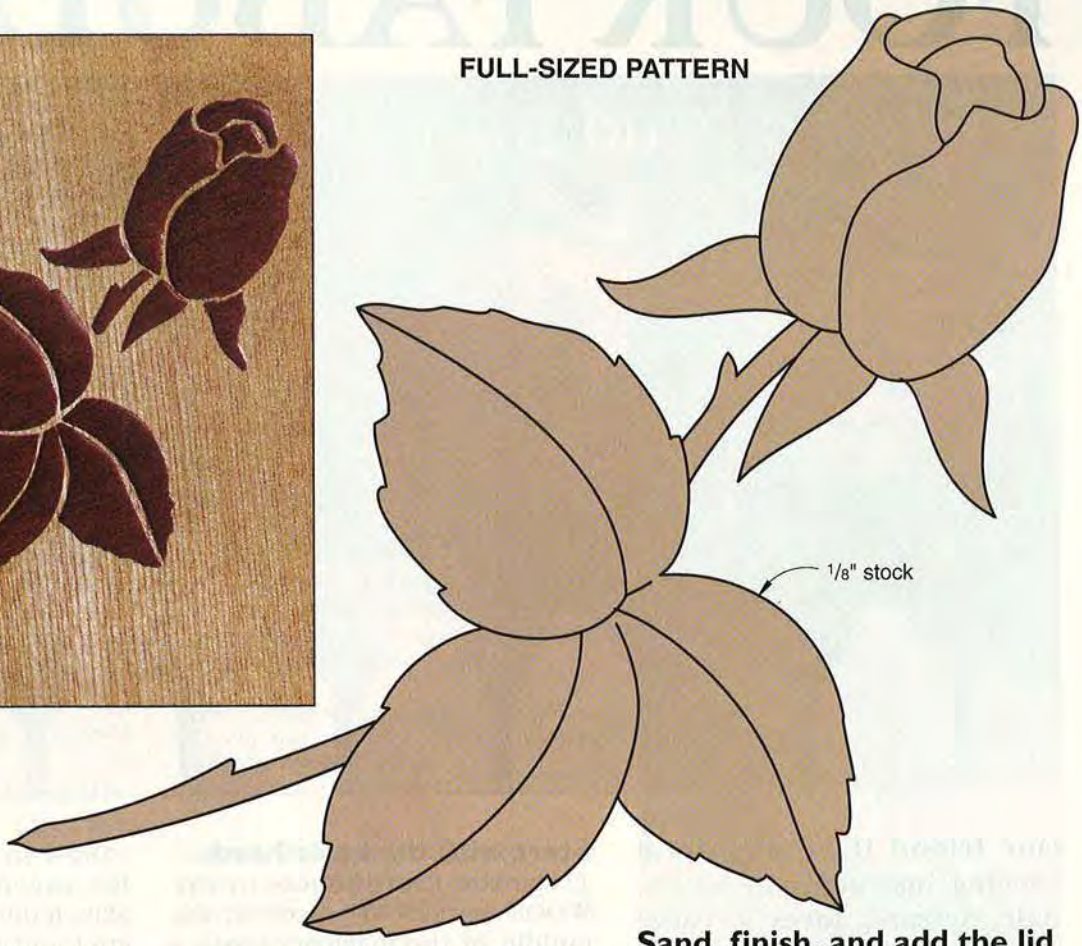
1 Cut the tray supports (Q) to size. Glue the supports to the inside of the project where shown on the Exploded View drawing.

2 Cut the tray front and back (R), sides (S), and bottom (T) to the sizes listed in the Bill of Materials.

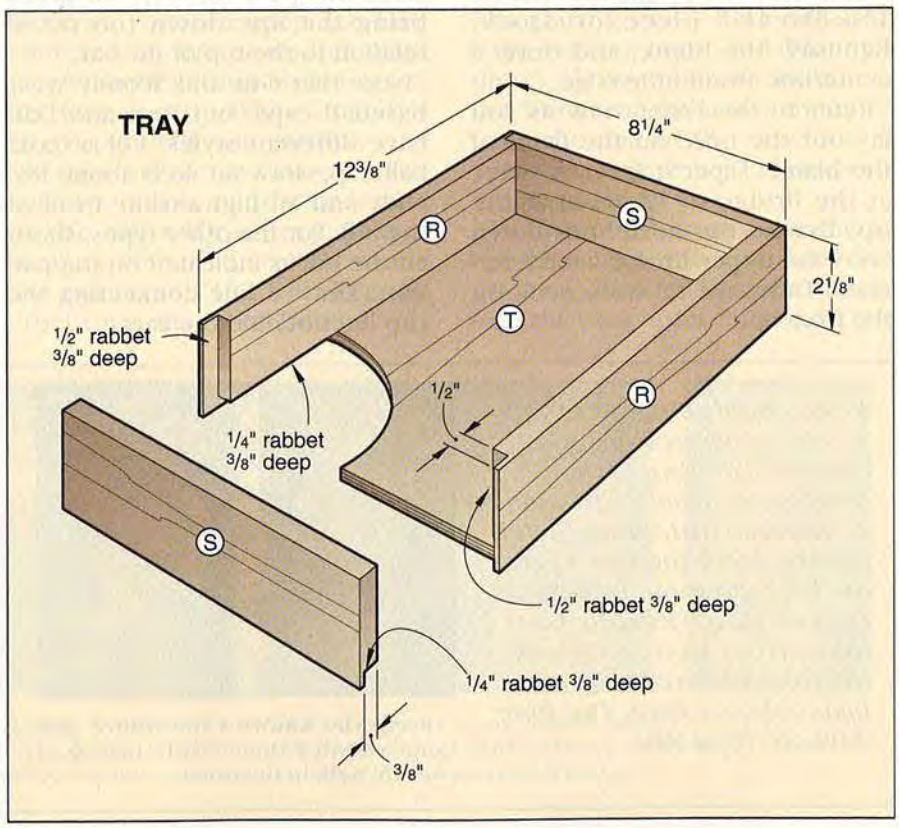
3 Cut ¼" rabbets along the bottom edges of the front, back, and sides (R, S) where shown on the Tray drawing. Then, cut ½" rabbets ⅜" deep across the ends of the front and back pieces (R). Glue and clamp the tray in the configuration shown on the drawing. Check for square.



FULL-SIZED PATTERN



Use the full-sized pattern at *right*, and the technique article on page 53 for details on forming the rose. See the photo *above* for a close-up view of ours.



Sand, finish, and add the lid

1 Finish-sand the pieces and apply a clear finish.

2 Secure the lid sections to the carcase with 1¼×1½" hinges. To do this, fit a 1/16" shim between the lid sections. Tape the lid sections together with masking tape, keeping the side edges flush.

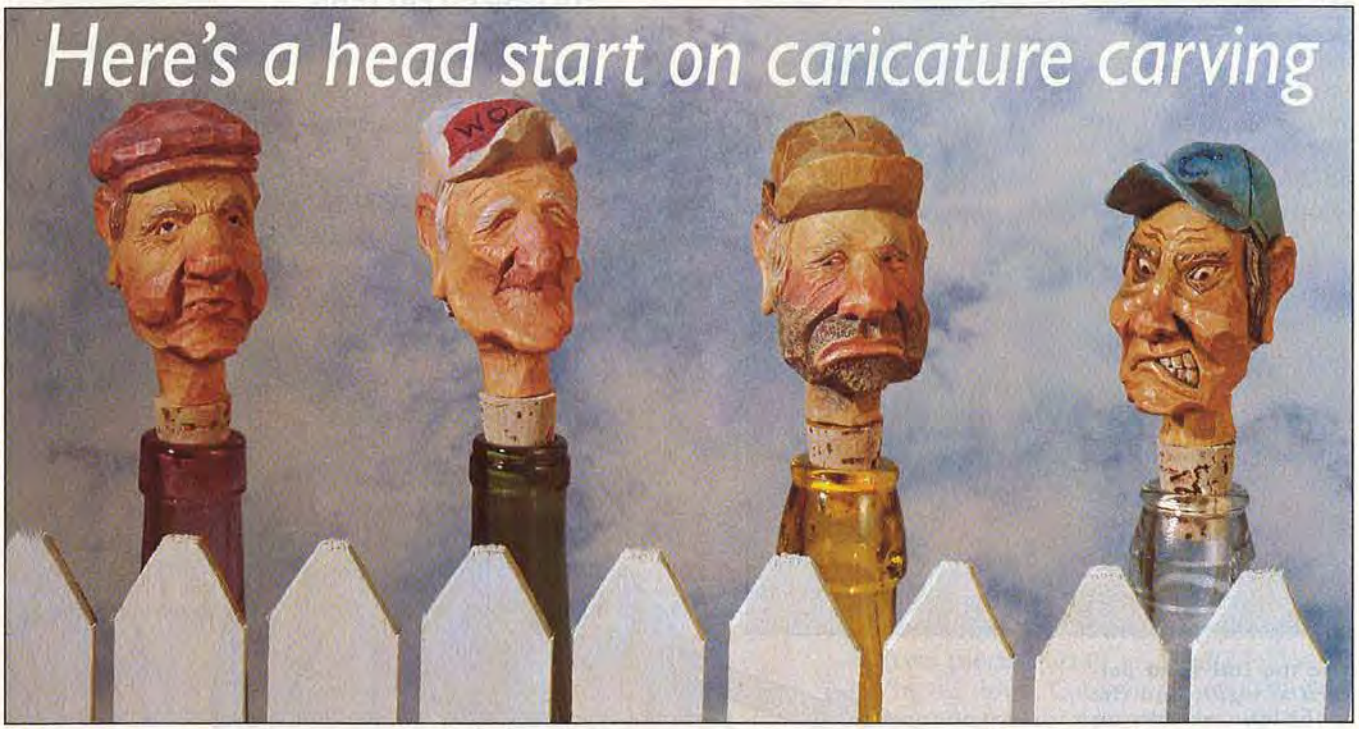
3 Lay the lid assembly bottom side up, and make a couple of pencil marks ½" from the outside edge. Mount the hinges into their mating mortises in rail (F). Position the cabinet so the hinged edge of the cabinet is aligned with pencil lines on the lid assembly. Drill mounting holes and secure the lid assembly to the cabinet. Remove the spacer.

4 Then add a lid support to each lid section. Tighten the screws on the lid supports so the lids will stay upright when opened.

Written by Marlen Kemmet
Project Design: Jan Hale Svec
Illustrations: Kim Downing; Lorna Johnson
Photographs: Hopkins Associates

FOUR FABULOUS

Here's a head start on caricature carving



Our friend Dave Rushlo, a carving instructor in Scottsdale, Arizona, loves to carve caricature heads. Here's how he varies features to create different personalities, starting from a single pattern.

Project prep

Stock: Basswood or other carving wood 1¾×2¾×4¼". For presawn blanks, see the Buying Guide.

Gouges
No. 3, ¾"
No. 9, ⅜" and ½"
No. 11 U-veiner, ¼"
No. 12 V-tool, ⅛" and ¼"

Knives
Bench knife

SEE THE *WOOD PATTERNS®* INSERT FOR FULL-SIZED PATTERNS

Start with the basic head

Trace the Profile view in the *WOOD PATTERNS®* insert in the middle of the magazine onto a 1¾×2¾×4¼" piece of stock. Bandsaw the blank, and draw a centerline around the edge.

Refer to the Front view as you lay out the nose on the front of the blank. Taper it from ¼" wide at the bridge to ½" wide at the tip. Extend the nose lines down onto the upper lip for later reference. Draw the ½"-wide neck on the front and back.

Draw in the sideburn line and the ear, following the pattern. Sketch the cap lines, too. The ears stick out past the cap, so don't bring the line down too far in relation to the top of the ear.

Note that Gus and Woody wear baseball caps, but Bert and Dan have different styles. For a baseball cap, draw an arch about 1⅛" wide and ⅜" high on the front of the bill. For the other types, shorten the bill as indicated on the pattern. Draw a line connecting the cap lines behind the ears.

From establishing personality to showing reaction, a caricature carving "speaks" through its facial expression. To demonstrate how facial features work together to create an expression, caricature carver Dave Rushlo fashioned from identical blanks the four distinctly different heads shown here. The four guys are, from left:

•Bert, who knows a lot of bird calls, and whistles them while taking his weekly walk in the woods.

FACES

Take your first cuts

Cut in the hat line from the forehead to the front of the ear, using the ¼" V-tool. Hold the open side of the V-tool straight up, and cut along the line to form a V-groove. Be careful not to cut into the ear.

Similarly, V-cut the sideburn line. Then, cut around the top, back, and bottom of the ear, and finish cutting the hat line behind the ear. Cut a V-groove across the back of the head, connecting the hat lines on the sides.

V-cut the lines marking the sides of the neck on the front and back of the blank. Then, with a shallow gouge, such as a no. 3, or a knife, cut away the waste on the sides of the blank. This will leave a rectangular stem on the carving which you'll later shape into your character's neck.

Round the face from the centerline to the sideburns. Cut back the wood on the sides, leaving the ears and sideburns standing out slightly from the surface. Pay attention to the centerline as you work so you can keep the face centered on the head. But don't worry about getting both sides of the face exactly alike—nobody's face is perfectly symmetrical.

If your character wears a baseball cap, hollow out the underside of the bill with a deep gouge, such as a no. 9. Carefully round the corners of the bill. For the other caps, shape the front.

Above: **Begin carving the eye sockets with a V-cut along the brow line to the nose. The left eye socket has already been carved out here.**

Right: **Gouge out a smooth surface as you cut the eye socket into the face. Make it at least ⅛" deep.**

Carve the eye sockets

Refer to the Brow Lines drawing, then draw the appropriate line on your character. Gus, of course, has glaring eyes, Bert and Dan have regular ones, and Woody's droop. Draw the brow line across the bridge of the nose, about ½" from the end of the nose—¾" if you want to give your character a longer nose.

V-cut the line from each end to the nose centerline, as shown in *Photo 1 above.* Then, cut alongside the nose up to the brow line with the U-veiner. Open up the eye socket with a deep gouge, as shown in *Photo 2 above.*

Set the eye socket back into the head ⅛–¼". When you look at the eye-socket area in profile you should be able to see through to the side of the nose. You also should see a rounded cheek below the eye socket.

Continued on next page

•Woody, a long-time woodworker who gives plenty of advice, and backs it with experience.

•Dan, a duck hunter who's just about bushed after a cold, damp, not-very-successful outing.

•Gus, the grimacing semi-pro pitcher who believes the ump erred in calling that last one a ball.

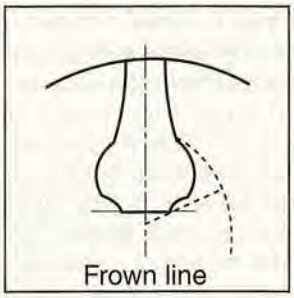
FOUR FABULOUS FACES

Rough-in the nose

Refer to the Noses drawing in the *WOOD PATTERNS®* insert. Note the placement of the wings in relation to the end of the nose for the different expressions.

With a narrow no. 9 gouge or U-veiner, set in the wings at the appropriate location. Here's how: Place the curved back of the gouge on the nose-width line with the open side of the gouge toward the centerline. Then, press it straight in as shown *below*.

Above: **Press a gouge straight into the face to set the nose wings. Go in to the depth of the surface under the nose.**



With the gouge, shave the nose sides above the wing. Narrow the upper part of the nose to the extent shown in the drawing.

Draw a line curving down from just above the wing to the upper lip area, shown in the drawing *above*. With a knife, cut straight in along the line.

Then, cut across under the nose from the frown line to the centerline where shown. Cut deeper at the frown line than at the centerline, releasing a wedge of wood around the lower part of the nose. This sets the nose into the face.

Round the upper lip area back to the frown line to prevent the flat-mouthed look. This will require deep cuts at the curve of the frown line, which also helps form the cheeks.

Draw a circle about ⅛" diameter on the end of the nose. With the ¼" no. 9 gouge, cut straight up the nose just outside the circle on each side. This will set the nose wings back from the end of the nose. With the same gouge, cut on an angle across the top of the wing to a point just above the frown line.

Now, for the eyes

Pencil in the eyebrows, following the Eyebrows illustration in the *WOOD PATTERNS* insert. Using a sharp-pointed detail knife, make a hollowing cut from the eyebrow up to the cap. This will in effect raise the eyebrows from the forehead. The deeper you cut, the more the eyebrows will stand out.

Now, sketch the upper and lower eyelids into the eye sockets. Draw the eyes high in the sockets, referring to the Eyes illustration. Place the eyes ⅝"–¾" apart, and don't let them run into the nose. When drawing the eyes, put all of the arch into the upper lid. The lower lid will be nearly a straight line, as shown.

To carve the eye, hold the head with the neck pointing toward you. Using a ⅛" V-tool, cut along the outermost line of the upper lid—the fold above the upper lid. Then, V-cut the lid line right below it, keeping the cut parallel and close to the previous one. If you carve closed eyes, such as Woody's, make this line nearly straight across.

Now, make a shallow stop cut along the V-line you just cut. With the tip of your detail knife, shave up to the stop cut from below. This forms the upper lid, which should stand out 1/16" or less.

Redraw the lower lid line, and cut it from the outside across to the inside corner with the V-tool. This begins shaping the eyeball. Stop-cut the V-cut as before, then shave down to it with the knife.

Make a short cut along the upper and lower lid in each corner of the eye, then insert the knife point at about a 45° angle toward the corner to pop out a small wedge at each side, defining the sides of the eyeball. Shape the eyeball. You should be able to see some of the eyeball when you look at the side of the head.

Using the V-tool again, form the lower lid and the bag under the eye. With the tool lying on its side, cut across right below the eyebrow to establish the lower lid. Then, using the tool in the ordinary fashion, carve a shallow downward arc underneath the lid.

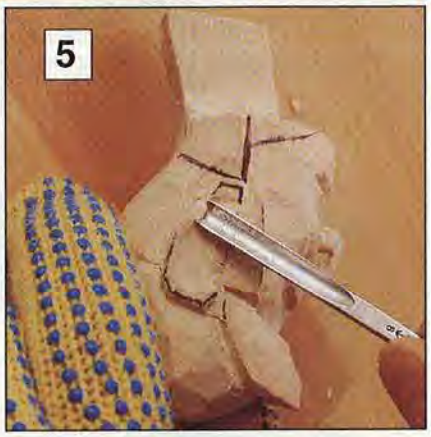
Next, the mouth

Sketch in the mouth (check out the Mouths drawing in the *WOOD PATTERNS* insert). Place the middle of the mouth on the centerline, about one-third of the way between the nose and the chin. In general, make the mouth approximately as wide as the center-to-center distance between the eyes.

For Bert or Dan, cut along the upper line with a 3/16" or ¼" U-veiner. With your knife, cut along the middle of the U-groove. Still wielding the knife, pare down from the top of the groove to the stop cut with a rolling cut, as shown in *Photo 4, opposite page*. This forms the upper lip.

For the lower lip, cut just below the lower line. For Dan, make the cut parallel to the upper lip. For Bert, cut a downward arc to create the mouth opening. Cut deeper at the corners of the mouth so the middle of the lip will curl outward. Finish shaping and softening the lips with your knife.

For old Woody's mouth, hollow the mouth area about ½" deep, cutting down from the nose and up from the chin. Draw the mouth in, and cut the line with a ⅛" V-tool. Pare both lips to the bottom of the V-cut as with Dan's



Above: **After stop-cutting the U-groove, pare down to the stop cut to form the upper lip. Deeply carved frown lines accentuate the cheeks and upper lip.**

Right: **A couple of gouge cuts across the back of the ear will give it more realistic shape. The marker lines show where to cut to establish the jawline.**

lips. Add some cuts for wrinkles as you shape and soften the lips.

To carve glaring Gus's mouth, cut the lines with a ⅛" V-tool. Stop-cut the bottoms of the V-cuts with your knife, and pare the lips. Then, shave down the area for the teeth under the curled lip, and carve the teeth.

Carve the ears and jawline

Scoop out the ear with a ⅜" no. 9 gouge. Start low on the back of the ear and make a curving cut up around the top, stopping at the sideburn line, indicated by the arrow on the Ear drawing.

Then, press the gouge straight into the wood a little above the center of the ear to form a semicircular stop cut. Gouge out the ear from the edge to the stop cut, then cut across the lower part from front to back to give it some curl, as shown in *Photo 5*.

Stop-cut the line between the ear and the sideburn, and shave the front of the ear down so it appears to come out of the side of the head. With a series of stop cuts, slice wedges of wood from behind the ear to give it shape and make it stand out from the head. Pare down the top of the sideburn to go under the hat.

To establish the jawline, cut straight down from the front of the ear to the bottom of the blank. From the same point at the front of the ear, make another knife cut toward the back of the head, angling it down past the ear. Pop out the triangle of wood, then blend the area into the neck. Leave a shallow ledge to delineate the hairline. Angle the jawline from about ¼" below the ear to the chin. Lines for these cuts are shown in *Photo 5*.

Catch up on some details

Turn up the sides of the nose wings slightly by cutting an angle across the bottom on each side. Leave the bottom of the nose flat in the center for the septum.

Carve in the nostrils with a no. 9 gouge or U-veiner, then make a shallow gouge cut from the upper lip to the septum. (In case you were wondering, this facial feature is called the *philitrum*.) Shape the nose as you wish.

Texture the hair, sideburns, and eyebrows with the ⅛" V-tool. You can use it to add facial wrinkles or crow's-feet, too. For Dan's stubbly beard, texture his face with the point of a small nail.

Model the cap. On baseball caps, carve the bill to about ⅛" thick. Add details such as a logo, stitching, or a button to any of the hats.

Inspect the carving, tidying up rough cuts, if necessary. Remove any fuzz with a gray or white Scotchbrite pad. Finally, whittle the neck down to fit in a hole in a cork stopper or block for display.

Now, your carving is ready to stain or paint, as you prefer. The carvings shown received washes of thinned paint. After finishing, sign the carving on the back of the neck, and insert into a stand or install the cork.

Buying Guide

Bandsawn blanks. Package A: one of each character, $16. Package B: one of each character with carving lines drawn on, $36.

Study castings. Resin castings taken from original carvings. Package C: one character (specify which), $15. Package D: one of each character, $46.

Combination. Package E: bandsawn blank of each character with lines drawn on and study casting of each character, $72.

All prices ppd. in U.S. Carving tools available also. Order from Dave Rushlo Wood Carvers Supply, 2530 N. 80th Pl., Scottsdale, AZ 85257, or call 602/994-1233 to order.

Project Design: ©Dave Rushlo
Photographs: John Hetherington
Illustrations: Roxanne LeMoine; Lorna Johnson

TREASURE TOWER

A tapered top sets this stylish étagère apart from the ordinary. Yet building it doesn't call for extraordinary workshop heroics, just straightforward sawing and routing.

Start with the base

1 Cut the base top and bottom (A) to the dimensions shown in the Bill of Materials.

2 Chuck a ¼" roman ogee bit into your router. (You can use either a table-mounted router or a handheld one.) Rout all four edges of both pieces. Rout the parts with the best surface of one facing up and the best surface of the other facing down,.

3 Cut out parts B and C. Make them ¼"-½" wider than shown in the Bill of Materials. Cut part D to the size shown.

4 Refer to Step 1 of the three-step Forming the Base Sides drawing on the *opposite page*, and rip a ½" strip from the front edge of each part B. You'll glue this piece back on later, so draw pencil marks on it for repositioning.

5 Install a ¼" dado blade on your tablesaw. Adjust the cutting depth to ¼", and saw a dado ¼" from the top of part C. Saw like dadoes in the large pieces of part B, shown in Step 2.

6 Glue the ½" strip back onto the front edge of each part B, shown in Step 3. Clamp until dry.

7 Using the dado blade again, rabbet the back edge and both ends of part D.

8 Reinstall your standard tablesaw blade, and tilt it to 45°. Miter-cut each part B where shown and both ends of part C. The dado should be on the inside (short) surface of each piece.

9 Sand all parts. Refer to the Exploded View drawing, and glue parts B, C, and D together. Square the assembly, and clamp. To check for squareness, measure diagonally from each back corner to the opposite front corner; the measurements should be equal.

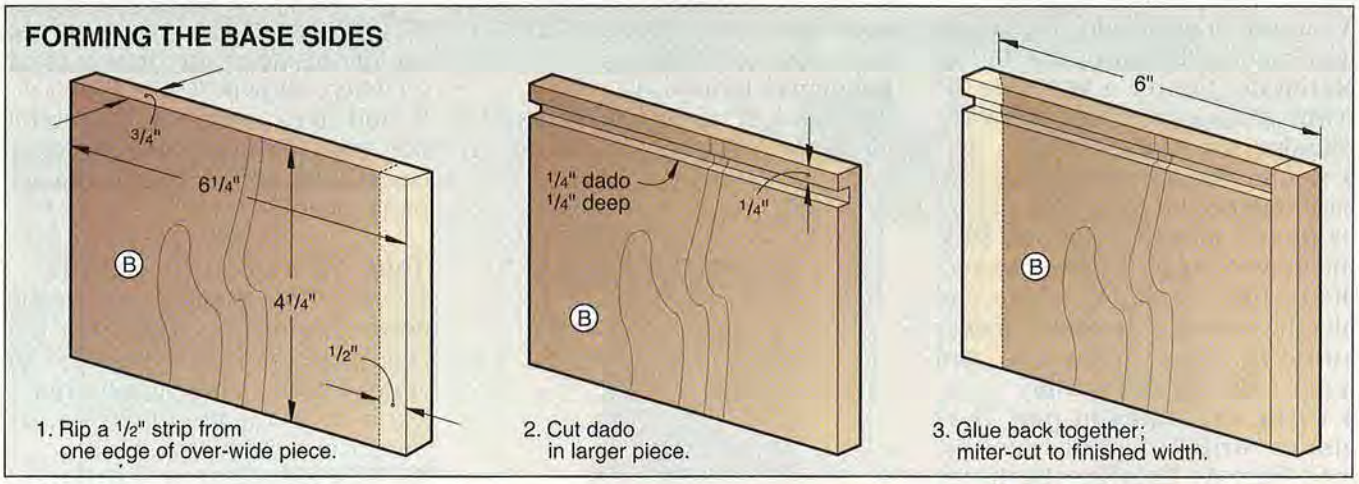
Next up, the slanting sides

1 Cut the two uprights (E) to the width listed in the Bill of Materials. Make them about ½" longer than specified.

2 Tilt your tablesaw blade to 7°. Cut the uprights to length, referring to the Full-Sized Side View pattern for part E. (You'll find the pattern in the *WOOD PATTERNS®* insert in the middle of the magazine.)

3 Keeping the same tilt angle, install a ¼" dado blade on the

A GRACEFUL DISPLAY FOR YOUR CURIOS



tablesaw. Adjust the cutting depth to ⅜", and saw the two shelf dadoes where shown in each side. See the photo *right*.

4 Using the Full-Sized Side View pattern, lay out the tapered edges on the uprights. Bandsaw slightly outside the lines, then sand or plane down to them to remove saw marks. Sand the uprights.

5 To make the two upper rails (F), start with a ¾×3⅜×12" piece of stock. Tilt your tablesaw's blade 3° from vertical, and rip the top edge to a finished width of 3¼".

6 Return the blade to vertical and set the miter gauge at a 7° angle to the blade. Crosscut parts F from the bevel-ripped stock.

7 Adhere the two parts together with double-faced tape. Refer to the Full-Sized pattern, and lay out the arch. Bandsaw the arch, and sand with a drum sander to remove saw marks. Separate the parts and sand them smooth.

8 Chuck a ⅛"-kerf slot cutter into your table-mounted router. Adjust the cutter's height to center the blade on the edge of part F. Refer to the Exploded View drawing and the Spline Detail, then rout the stopped slots in both ends of each part F and on the inside faces of each part E.

9 From ⅛"-thick stock, scrollsaw four 15/16"-wide splines 2⅞" long. Round the corners of one end to match your slot cutter's radius.

Saw the ¼" shelf dadoes straight across each upright with the blade tilted to 7°. The dadoes angle toward the bottom.

10 Dry-assemble parts E and F with the splines. Glue the parts together. Clamp, using the wedge-shaped scraps ripped from the uprights as fillers, as shown *above right*. Sand the assembly after the glue dries.

Build the towering top

1 Cut the top (G) to the size shown. Rout both edges and ends with a ¼" roman ogee bit. Sand.

2 Glue the top to the assembled uprights and upper rails (E and F). Clamp in position, protecting the upper surface of the top and the lower edges of the upper rails with scrapwood.

3 After the glue dries, stand the assembly on its top. Center a part A (the one with its best face unrouted) on the ends of the uprights (E), the plain face toward the uprights. Clamp in position.

The waste edges ripped from the uprights make convenient pads for clamping the tapered top section.

4 Drill 7/64" pilot holes through part A into the uprights where shown. Drill on an angle so the screws will go into the middle of each upright, as shown on the Section View drawing. Enlarge the holes through part A to 5/32", and countersink them. Attach part A to the uprights with #8×1½" flat-head wood screws.

Attach the base

1 Center the base assembly (parts B, C, and D) on the inverted top assembly, with part D against the bottom of part A. Clamp the assembly in position.

2 Drill 7/64" pilot holes through part D into part A. Place a stop collar or piece of masking tape around your bit 1" from the end so you won't drill through part A.

3 Enlarge the holes through part D to 5/32", and countersink them

Continued

TREASURE TOWER

where shown. Attach the base assembly to the top assembly with #8×1" flathead wood screws.

4 Cut the drawer guide (H) to the dimensions shown in the Bill of Materials. Center a 3/32" hole 5/8" from each end. Sand smooth, rounding the edges slightly.

5 Center the assembled top and base unit on the remaining part A, its routed surface facing up. Slide the drawer guide (H) into the middle of the opening until the end hits the back (C). Hold the drawer guide in place on part A, and remove the upper assembly.

6 Using the holes in part H as guides, drill 3/32" pilot holes 3/8" into part A. Enlarge the holes through the drawer guide to 9/64", and countersink them. Attach the drawer guide to part A with #6×5/8" flathead wood screws.

7 Center the upper assembly on part A. Clamp in position, then drill 7/64" pilot holes through part A into the base sides (B) where shown. Enlarge the holes through part A to 5/32", countersink them, and fasten part A to the upper assembly with #8×1½" flathead wood screws.

Construct the drawer

1 Cut the drawer front (I) to size. The dimensions shown allow 1/16" clearance on each side and on top in the 4¼×9½" drawer opening.

2 Saw or rout a ½" rabbet 3/8" deep along the top edge and both ends on the inside of the drawer front. (See the Drawer drawing.)

3 On the outer face of the drawer front, saw a 1/16" kerf ¼" deep, shown by the Drawer Front Reveal detail. This provides visual clearance of 1/16" at the bottom of the drawer to match the side and top. To cut it, position the saw fence 4⅛" from the blade, and adjust the cutting depth to ¼".

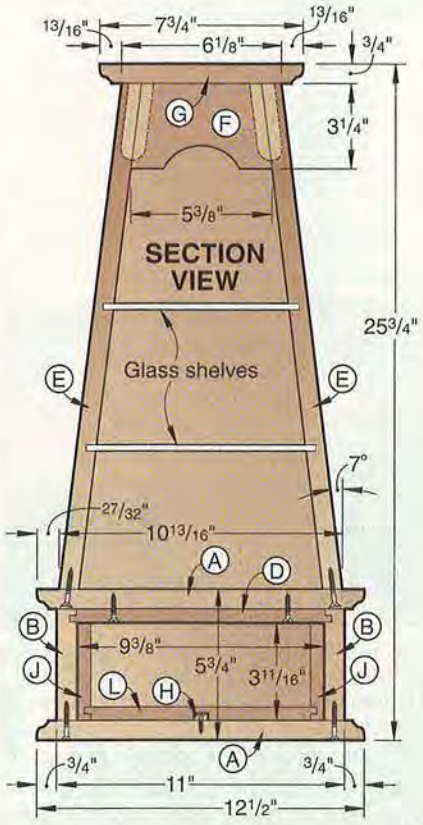
4 Cut out the remaining drawer parts, J, K, and L.

5 Saw or rout a ½" rabbet ¼" deep at the back end of each drawer side (J). On the bottom surface of the drawer bottom (L), form a 3/8" rabbet ¼" deep along the front edge and a ¼" rabbet ¼" deep along each end.

6 With your tablesaw and a ½" dado blade, cut a ¼"-deep dado in the center of the bottom side of the drawer bottom (L).

7 Install a ¼" dado blade on your tablesaw. Adjust the cutting depth to ¼", and saw a groove ¼" from the bottom of each drawer side (J). Crank up the cutting depth to 3/8", and saw a groove along the bottom inside of the drawer front (I) where shown.

8 Sand all parts smooth. Be careful not to round over the corners or edges. Glue and clamp the drawer parts together.



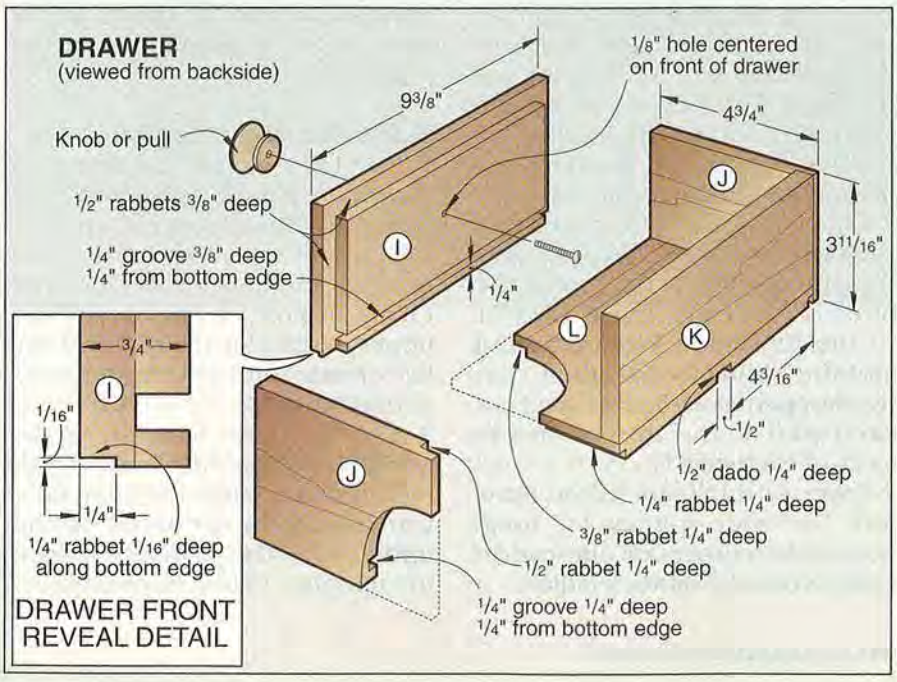
Take care of some details

1 Drill a hole in the center of the drawer front for a knob. (For the étagère in the photo, we used an antique-brass bail-type pull, but a knob of plain wood, brass, or porcelain would work, too.)

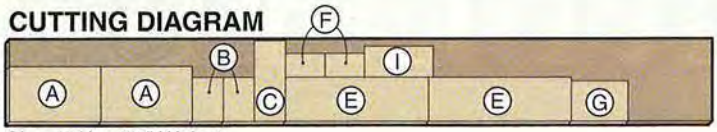
2 Cut cardboard or hardboard templates to fit into the shelf slots. Take the templates to your glass dealer, and have shelves cut from ¼" glass. Ask for polished edges on the shelves. (You also could make wooden shelves, and glue them into the slots.)

3 Finish-sand the shelf unit and drawer to 220-grit. Apply the finish. (We stained our walnut project with medium walnut stain for more consistent color, then applied four coats of Minwax Antique Oil Finish.)

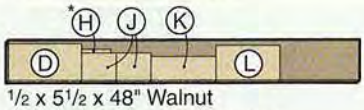
4 Slide the glass shelves into place. Then install the drawer pull, and, finally, slide the drawer into the base.



CUTTING DIAGRAM

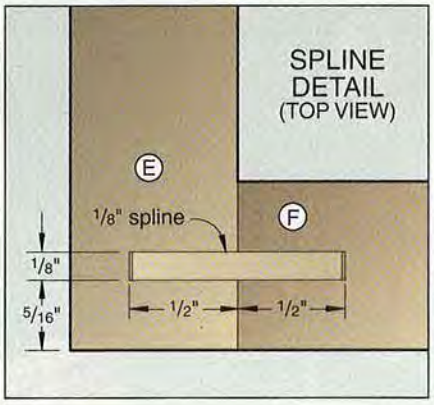


3/4 x 11 1/4 x 96" Walnut



1/2 x 5 1/2 x 48" Walnut

*Plane or resaw to thickness listed in Bill of Materials.



Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
A Top/bottom	3/4"	7 1/2"	12 1/2"	W	2
B* Base side	3/4"	6"	4 1/4"	W	2
C* Base back	3/4"	11"	4 1/4"	W	1
D Base filler	1/2"	5"	10"	W	1
E* Upright	3/4"	6"	19 1/2"	W	2
F* Upper rail	3/4"	3 1/4"	5 3/8"	W	2
G Top	3/4"	5 1/2"	7 3/4"	W	1
H Drawer guide	1/4"	15/32"	4 1/4"	W	1
I Drawer front	3/4"	4 3/16"	9 3/8"	W	1
J Drawer side	1/2"	3 11/16"	4 3/4"	W	2
K Drawer back	1/2"	3 3/16"	8 7/8"	W	1
L Drawer bottom	1/2"	4 3/4"	8 7/8"	W	1

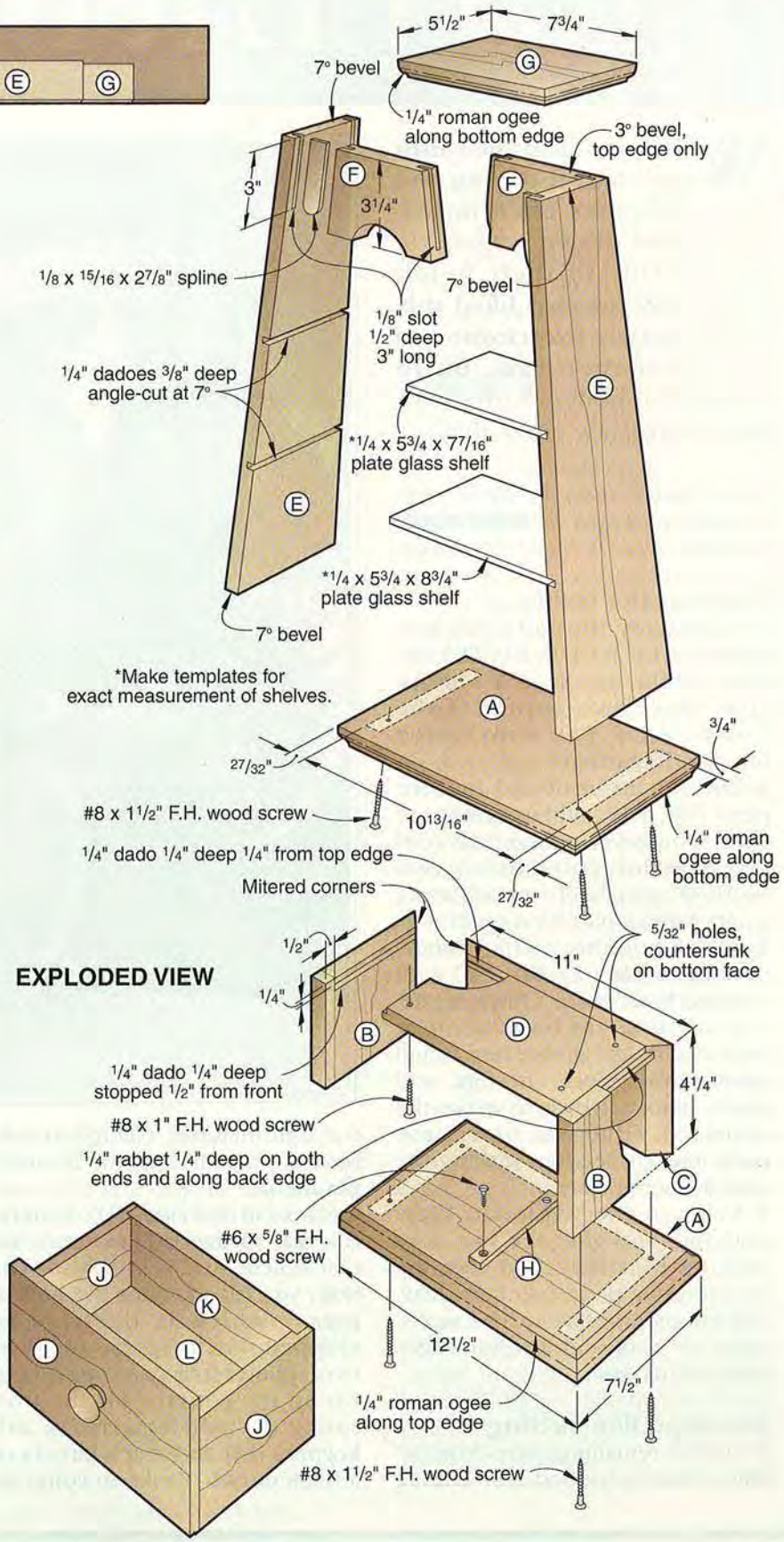
* Make oversized initially, then cut to finished size in accordance with how-to instructions.

Material Key: W–walnut

Supplies: 1/4" glass (see text for sizing procedure); flathead wood screws—#6x5/8", #8x1", #8x1 1/2"; drawer knob or pull; medium walnut stain, Minwax Antique Oil Finish.

Project Design: James R. Downing
Illustrations: Kim Downing; Roxanne LeMoine; Lorna Johnson
Photographs: King Au; Craig Carpenter

EXPLODED VIEW



YESTERYEAR'S

When a train pulled into the station during the 1880s, travelers often boarded a horse-drawn wagonette for the ride to their hotel. Large families also liked this horse-drawn forerunner to the passenger van. Build yourself a model of one with just a scrollsaw and a drill.

***Note**: You'll need ¾"-thick pine or basswood and ⅛"-thick Baltic birch plywood to build the model.*

Start on the inside

1 Photocopy the full-sized patterns in the *WOOD PATTERNS®* insert in the middle of the magazine. Make two copies of the Coach Roof (A) and Coach Interior (B) patterns.

2 Cut out the roof and interior parts first. With rubber cement or spray adhesive, adhere the roof and interior patterns to two ¾×4¼×8" pieces of stock, placing a part A and a part B on each.

3 For cutting the ¾"-thick stock, install a #5 blade (.038×.016" with 12½ teeth per inch). On each interior section, cut out the piece indicated by the dotted line. Stand each cutout piece on edge, and resaw it to ⅜" thick to make the seats (C). Glue one piece into each interior section, making the outside faces flush.

4 Refer to the Exploded View drawing, and glue the two roof sections together. Also glue the two interior parts together, leaving an aisle between the seats. Sand the roof and interior edges flush, as necessary.

Do some fine cutting

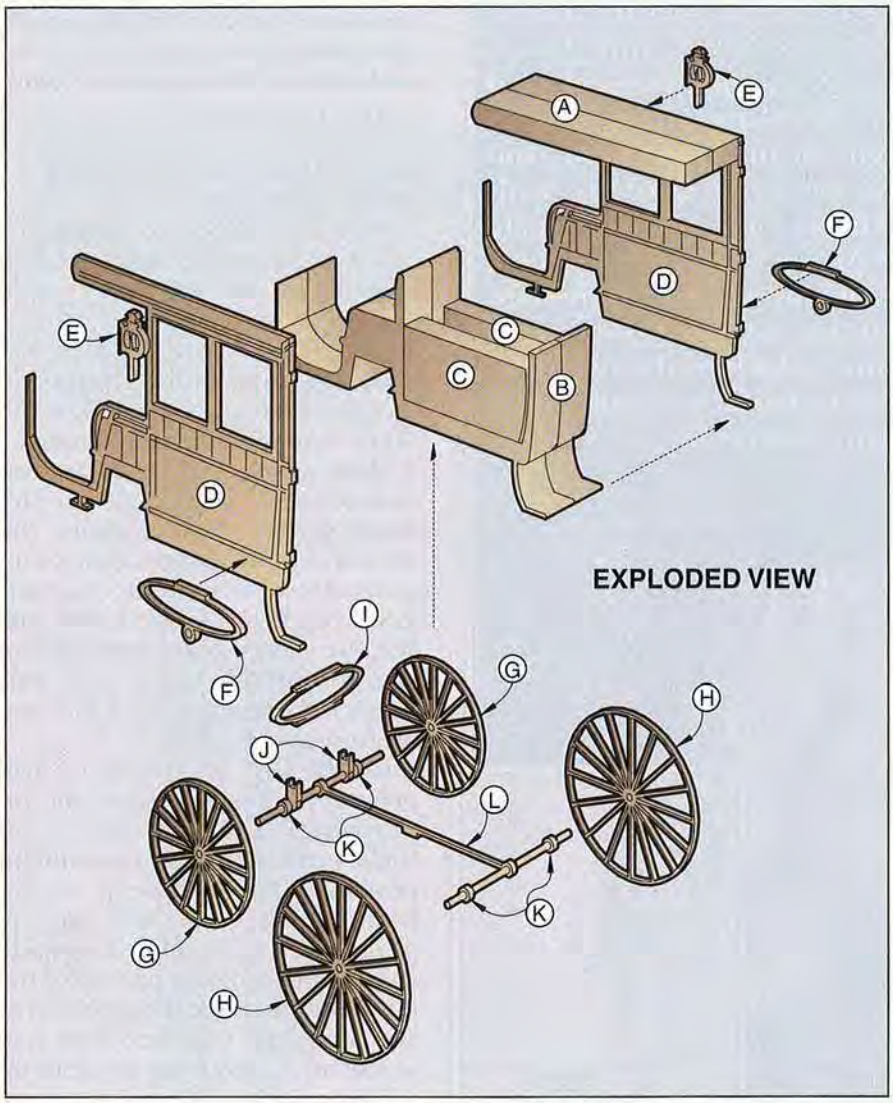
1 Cut the remaining parts from ⅛" Baltic birch plywood. For cutting the thin material, change to a #2 blade (.029×.012" with 20 teeth per inch).

2 Stack-cut the sides (D), lanterns (E), rear springs (F), and front and rear wheels (G,H) in threes. This way, you can sacrifice the bottom piece, which is likely to be chipped out in spots, and have two splinter-free parts remaining. Group the patterns for the front spring (I), axle hangers (J), axle keepers (K), and reach bar (L) on a stack of two blanks, keeping the top pieces and sacrificing the bottom ones.

3 Cut the blanks to approximate size, allowing space at the edges to tape, glue, or nail the cutting stacks together. Adhere the patterns to the top of each stack.

4 Drill blade start holes in the areas shown on the sides, lanterns, springs, and between the wheel spokes. Drill ⅛" holes in the wheel hubs and axle keepers, and 9/64" holes in the rear springs, axle hangers, and reach bar.

MINIVAN Scrollsaw this 1880s wagonette



5 Begin cutting each piece with the largest inside cut. Complete all the inside cuts before sawing around the outside line. When cutting the outside line of the side pattern, start where indicated on the pattern. Cut into each interior line as you reach it. When you reach the end of a stopped line, back the blade out to the starting point, and continue.

6 To cut out the small parts, such as the axle keepers, you'll need a saw table with a zero-clearance blade slot. To make one, cut a piece of ⅛" Baltic birch plywood about the size of your saw's table. Align the edges of this auxiliary table with the edges of the saw table, then saw into it until the front edge of the auxiliary table mets the saw table's front edge. Hold the auxiliary table in place with double-faced tape.

Put it all together

1 Glue the sides to the interior, and glue the roof between the sides, referring to the Exploded View drawing. (We used yellow woodworker's glue.) Glue the front and rear springs and the front axle hangers into position.

2 Now, paint the wagon body and springs as an assembly. Apply gloss black spray enamel in several light coats to avoid filling the finely cut detail lines. Sand with 220- and 320-grit sandpaper between coats to reduce fuzzing and grain show-through.

3 Paint the driver's seat with dark tan enamel to represent leather upholstery. (We used Testor's Model Master paint, available from hobby shops, in a color named *leather*.) Paint the seat rails and front footsteps brass (also a Model Master color), along with the coach lanterns. Glue the lanterns to the front body pillars where shown. (For best results, scrape away the paint on the body and lantern where you glue.)

4 Paint the wheel spokes red and the rims yellow (we used naphthol crimson and cadmium yellow medium in acrylic artist colors, available from art or craft stores). Paint the wheel treads black. (A black marker works well for this.) Paint the reach bar black, too.

5 Cut two pieces of ⅛" dowel rod 3¼" long for the axles. Assemble the wheels, axles, keepers, and reach bar through the springs as shown. (We left the axles unfinished for contrast; you could paint them, if you like.)

Buying Guide

Catalog. For a catalog showing hundreds of scrollsaw patterns, including other wagon and carriage models, write to Scroller Ltd., 9033 S. Nashville, Oak Lawn, IL 60453, or call 800/486-6053.

Project Design: © Scroller Ltd. Photograph: Hopkins Associates Illustrations: Roxanne LeMoine

A MISSION-STYLE

Floor Lamp/Coat Tree Combo

When Chuck Hedlund, WOOD® magazine's Project Builder, joined us a couple of years ago, he said he'd like to develop some project designs in his spare time. And are we ever glad he did. These two mission-style projects reflect Chuck's no-nonsense approach to creating simply designed, functional items. No matter which of the two projects you decide to build, we know you'll be satisfied with the results.

Note: *The two projects shown here contain posts that differ in length, hardware, and construction, depending on use. The base construction for both projects is the same. See the Buying Guide accompanying the Bill of Materials for the specialized hardware kit for each project.*

Let's build the laminated lamp post first

1 From 1 1/16"-thick oak (commonly called five-quarter stock), cut two post halves to 2 3/8" wide by 51" long each.

2 Cut or rout a 3/8" groove 3/16" deep *centered* along the inside face of each post half. See the Lamp Post drawing for reference.

3 Mark a line 3 1/2" from the top end of each post half on the *inside* surface. Now, measure the thickness of the lamp-rod hex nut, and mark a second line this distance below the first marked line. See the Lamp Post drawing and accompanying Lamp-Post Nut detail for reference. Our hex nut measured 1/8" thick.

4 Chuck a 1/8" bit into your drill press so only about 3/4" of the bit protrudes from the chuck. On some smaller chucks, more might protrude. This will keep the bit from flexing. Now, drill overlapping holes to form a slot wide enough in both post halves for the nut to fit into once the post halves are laminated together. (We had to use an X-acto knife to clean up each slot.) Our nut measured 1/2" wide so our slots measured just over 1/4" deep in each post half. See the Lamp-Post Nut detail for reference. Now, thread the rod into the hex nut. Insert the rod/nut into the lamp post and hold the two post halves together. Make sure the two post halves come together tightly.

5 With the edges and grooved ends flush and the threaded lamp rod and hex nut in place in the groove, glue and clamp the two lamp-post halves together to form the lamp post (A). When applying

MATCHED SET

the glue, hold it back from the groove about ½" to keep from getting glue in the groove.

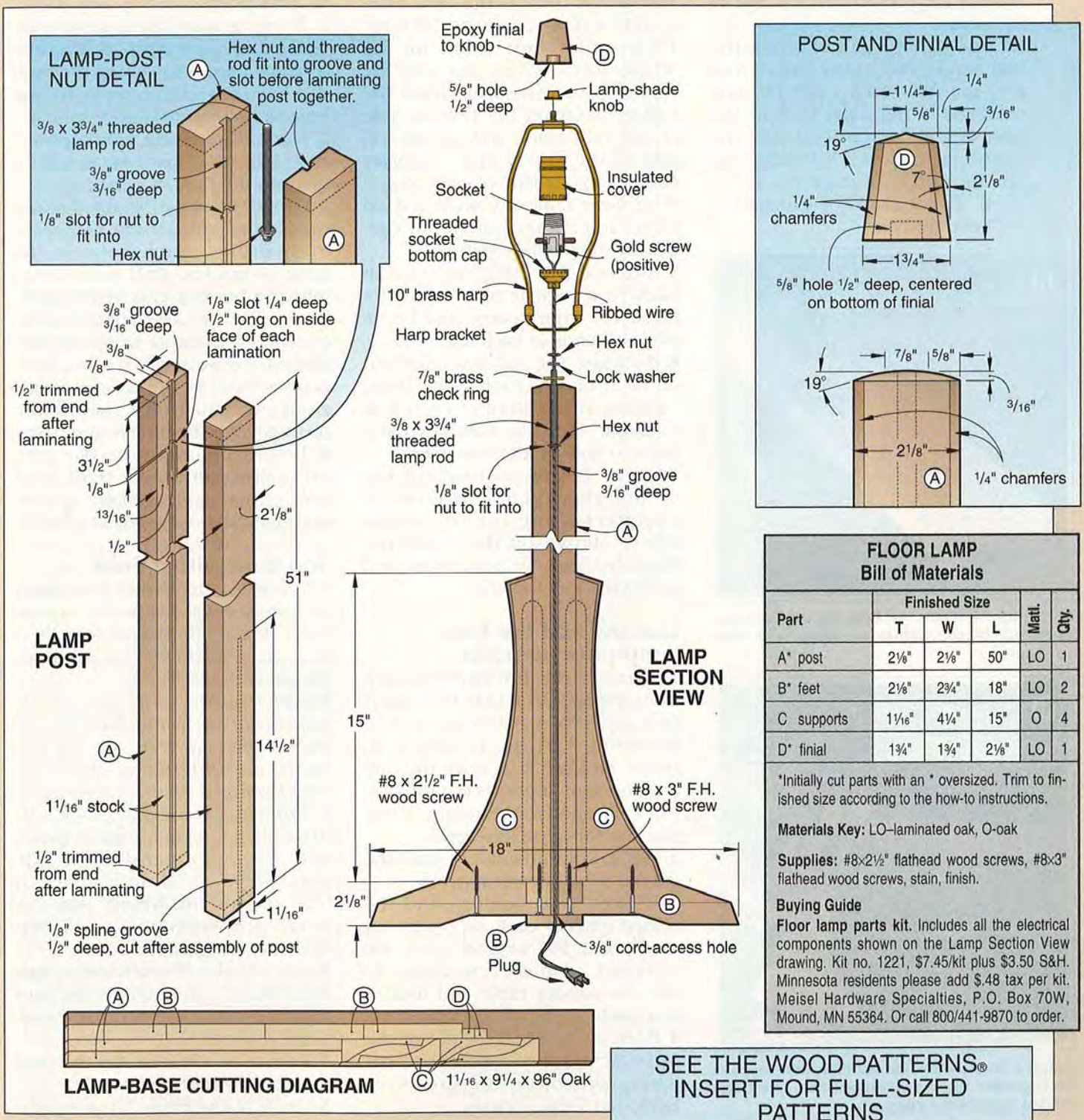
6 After the glue has dried, remove the threaded rod, leaving the nut in the mating slots. Now, trim ⅛" off each laminated edge (the edges with glue joints) for a 2⅛" finished width.

7 Trim ½" off the top and bottom ends of the laminated post (A) for a 50"-long post.

8 Tilt your tablesaw blade 19° from center, and using a miter gauge with a long wood extension for support, angle-cut the top of the post to the shape shown on the Post and Finial detail *below*.

9 Fit your table-mounted router with a chamfer bit, and rout a ¼"

Continued



FLOOR LAMP
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* post	2⅛"	2⅛"	50"	LO	1
B* feet	2⅛"	2¾"	18"	LO	2
C supports	1 1/16"	4¼"	15"	O	4
D* finial	1¾"	1¾"	2⅛"	LO	1

*Initially cut parts with an * oversized. Trim to finished size according to the how-to instructions.

Materials Key: LO–laminated oak, O-oak

Supplies: #8×2½" flathead wood screws, #8×3" flathead wood screws, stain, finish.

Buying Guide

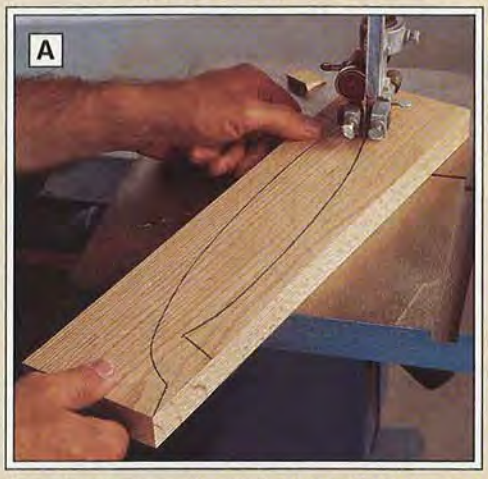
Floor lamp parts kit. Includes all the electrical components shown on the Lamp Section View drawing. Kit no. 1221, $7.45/kit plus $3.50 S&H. Minnesota residents please add $.48 tax per kit. Meisel Hardware Specialties, P.O. Box 70W, Mound, MN 55364. Or call 800/441-9870 to order.

SEE THE WOOD PATTERNS® INSERT FOR FULL-SIZED PATTERNS

MATCHED SET

chamfer along each corner of the post (A), starting 17" from the bottom end of the post. See the Coat-Tree Exploded View drawing for reference. (We used a fence when routing the chamfer to prevent accidentally running the chamfer around the top chamfered end of the post.)

10 For adding and aligning the four supports (C) later, cut or rout a ⅛" groove ½" deep and 14" long *centered* along each face of the post at the bottom end. See the Coat-Tree Exploded View drawing on the *opposite* page for reference. Use a stop for consistent 14"-long grooves.



For minimal waste, we laid out the two supports side-by-side before we bandsawed them to shape.

Using a handscrew clamp clamped to your disc-sander table for alignment, sand the angled ends of the supports.

Add the feet for a rock-solid base

1 To form the feet (B), start by cutting four pieces of 1 1/16"-thick stock to 2⅞" wide by 19" long. Glue and clamp two pieces together face-to-face for each foot.

2 Remove the clamps and trim each foot to 2¾" wide by 18" long.

3 Using the dimensions on the *WOOD PATTERNS®* insert in the center of the magazine, mark the half-lap joint on the bottom side of one foot blank and on the top side of the other. Then, transfer cutlines to one side of each foot.

4 Fit your tablesaw with a dado blade, and cut the notches to size. Test-fit the pieces together.

5 Remove the dado set. Switch back to a regular blade. Tilt the blade 19° from center, and bevel-cut both ends of each leg.

6 Bandsaw the other angled cut on each end of each foot. Then, bandsaw the bottom of each foot to shape. Sand the bandsawn surfaces to remove the saw marks.

7 Fit the feet pieces together, but do not glue them yet. Rout ¼" chamfers along the top edges where shown on the Coat-Tree Exploded View drawing. Glue and clamp the feet together.

Cut and add the four lamp-post supports

1 Transfer the full-sized pattern from the *WOOD PATTERNS* insert to a piece of hardboard or thin plywood. Cut the template to shape, and use it to mark the outlines for four supports (C) on 1 1/16" stock. As shown in Photo A, bandsaw the supports to shape.

2 Using a drum sander, sand the curved edge of each support.

3 Using a disc sander, sand the angled ends of each support. (For consistent 19° angled ends, we clamped a handscrew clamp to our disc-sander table and used it as a guide as shown in Photo B.)

4 Rout a 3/16" chamfer along the outside edge of each support where shown on the Coat-Tree Exploded View drawing.

5 Cut four 15/16"-wide by 13⅞"-long splines from ⅛" stock. Sand the top end of each spline to fit into the routed mating grooves in post and supports.

Let's add the base to the post

1 Working from the bottom side of the base assembly, drill countersunk mounting holes through the base for attaching it to the post and supports later.

2 Mark the mating centerpoint, and drill a ⅜" cord-access hole through the base.

3 Center the base on the bottom end of the post. Using the previously drilled shank holes in the base as guides, drill pilot holes into the bottom end of the post. Secure the two assemblies together with 3" flathead wood screws. Check for square. If the cord-access hole in the base doesn't align perfectly with that in the post, enlarge the hole in the base.

4 Test-fit the supports (C) with the splines in place. Drill pilot holes, then, glue, spline, screw, and clamp the supports in place.

Top it off with a finial

1 Laminate, then plane 1 1/16" stock to form a finial blank 1¾" square by 6" long. The extra length is necessary in the following steps for safety in machining.

Note: *Use the same procedure described here to machine the top end of the coat tree. See the Top detail accompanying the Coat-Tree Exploded View for reference.*

2 Tilt your tablesaw blade 19° from center. Using a miter gauge with a wood extension for support, angle-cut all four edges of one end of the blank. See the detail accompanying the Lamp Section View for reference.

3 Lay out the 7° cutlines on the finial blank, and bandsaw the four tapers to shape. Sand the bandsawn surfaces.

4 Rout a ¼" chamfer on the final where shown on the detail.

5 Crosscut the finial (D) to length.

6 Supporting the finial with a handscrew clamp, drill a ⅝" hole ½" deep in the bottom center of the finial. See the Lamp Section View for reference. Epoxy the lamp-shade knob into the hole.

Add the stain, finish, and electrical parts

1 Finish-sand the lamp-post assembly and finial. Stain and finish the parts. (We used Minwax Special Walnut Stain, followed by several coats of Deft Semi-Gloss Lacquer.)

2 Install the electrical parts in the configuration shown on the Lamp Section View drawing. For wiring specifics, see the electrical wiring article on *page 14*.

Let's make the coat tree

The construction procedure for the coat tree is nearly identical to that of the lamp except for the following changes: First, the coat tree uses a post 67¾" long, and the post is not hollow. Next, machine the top end of the coat tree using the same procedure as you did for the finial on the lamp. Drill pilot holes and add the four brass coat hooks to the post where shown on the Coat-Tree Exploded View drawing.

COAT TREE
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* post	2⅛"	2⅛"	67¾"	LO	1
B* feet	2⅛"	2¾"	18"	LO	2
C supports	1 1/16"	4¼"	15"	O	4

*Initially cut parts with an * oversized. Trim to finished size according to the how-to instructions.

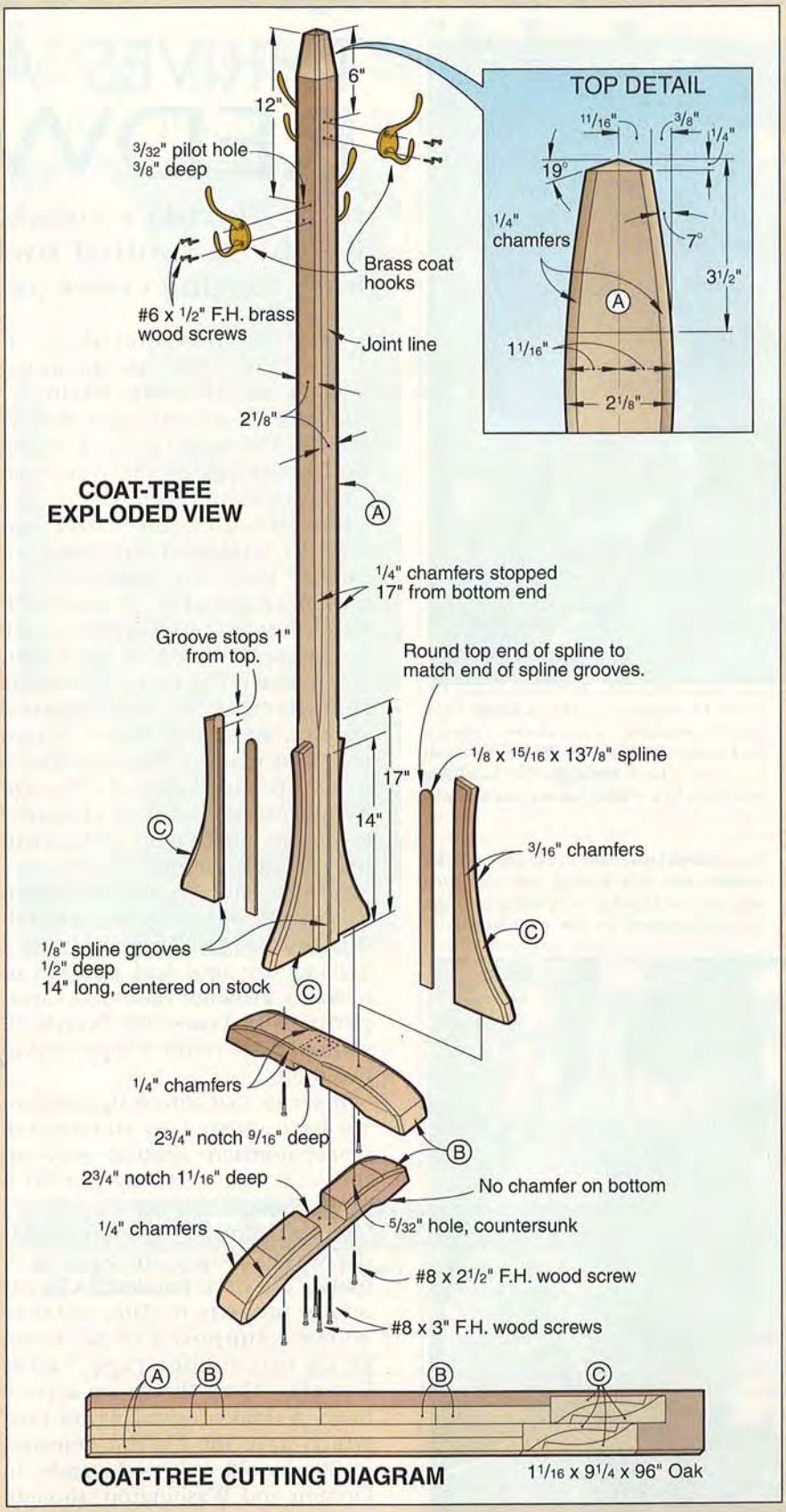
Materials Key: LO–laminated oak, O-oak

Supplies: #8×2½" flathead wood screws, #8×3" flathead wood screws, stain, finish.

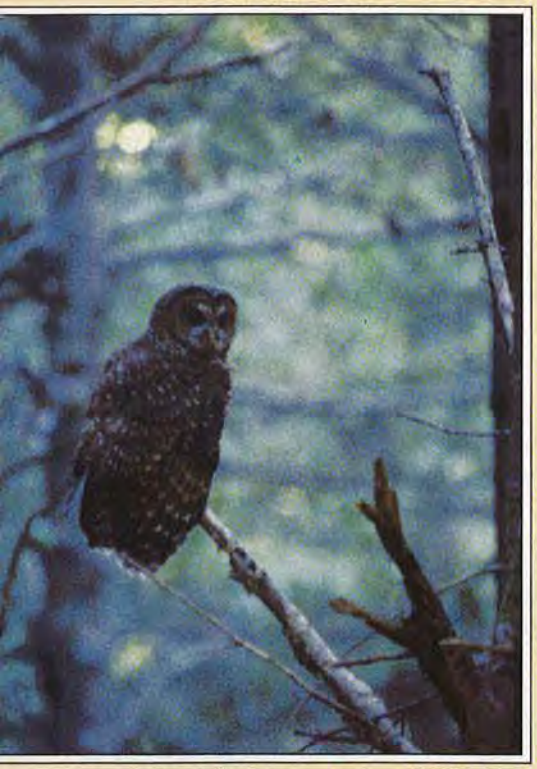
Buying Guide

Coat hooks. Four brass hallstand coat hooks with screws. Catalog no. S1613PPD. $25.95 ppd. for four. Van Dyke's, P.O. Box 278, Woodsocket, SD 57385. Or call 800/843-3320 to order.

Written by Marlen Kemmet
Project Designs: Chuck Hedlund
Illustrations: Kim Downing; Lorna Johnson
Photographs: King Au



AN ENDANGERED SPECIES



After 10 minutes of the wildlife biologist's hooting, a northern spotted owl comes into view. His enticement to come close enough for banding will be a live white mouse on a stick.

Print this article

Its attention diverted by a fake mouse tied to a string, the northern spotted owl looks away long enough for entrapment by the wire noose.

THRIVES AMONG THE REDWOODS

In California's rugged redwood country, the northern spotted owl happily lives on, with busy logging crews as neighbors.

"Hooo. Hoo, Hoo. Heoo." It was eerie—the haunting call of an owl skillfully voiced by a brawny man in shirt sleeves. The sound echoed among the redwoods of the northern California mountainside.

Lowell Diller, the caller and wildlife biologist for Simpson Timber Company, shivered, not only from the chill air and brisk wind, but in anticipation of the soon-expected sight of a northern spotted owl. The bird was a representative of an endangered species, an animal whose feared loss had caused logging operations up and down the Pacific Northwest to shut down in order to preserve the virgin, old-growth forest it called home.

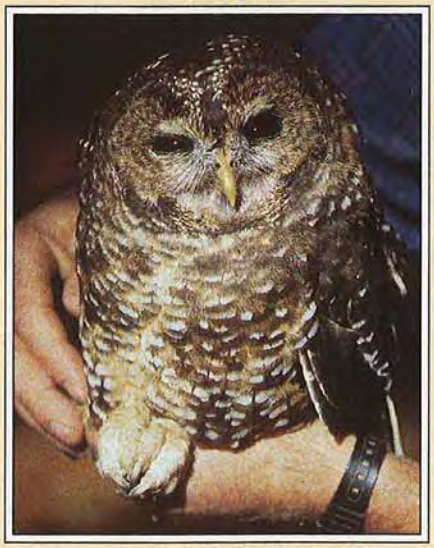
This site, though, was not virgin timber. It was a second-growth redwood forest logged about a half-century ago. And adjacent to it was a growing redwood forest perhaps 15 years old. Northern spotted owls weren't supposed to live there.

"It seems that almost by accident we have created an atmosphere where northern spotted owls can thrive. So we certainly can do it on purpose," says Bill Houston, a Simpson forester whose job that day was to assist in the banding of owls. "We have banded 747 owls on our property to date, and they weren't supposed to be here, given our timber type," adds Lowell. "They thrive on a prey base of dusky-footed wood rats, which have the highest densities in 20-year-old redwood stands. In Oregon and Washington, though, the owls feed on the flying squirrel, which prefers to live in old-growth Douglas-fir."

In acknowledgment of that fact, in 1992 the U. S. Fish and Wildlife Service approved Simpson's Habitat Conservation Plan, which allows the timber company to continue to log on its own lands (see "Logging in the Land of Giants," *page 44*) as long as the company plans for the preservation and enhancement of the owl population. It was the first such plan from a private company ever approved by the agency.

"We have to monitor the owls all the time, but the plan is based on the fact that over time we will grow more habitat. The owls will simply move around," comments the forester.

Written by Peter J. Stephano
Photographs: Dan Sullivan



Biologist Diller handles the three-pound bird gently, and with care. Its long needle-sharp talons could easily bury themselves in a finger.

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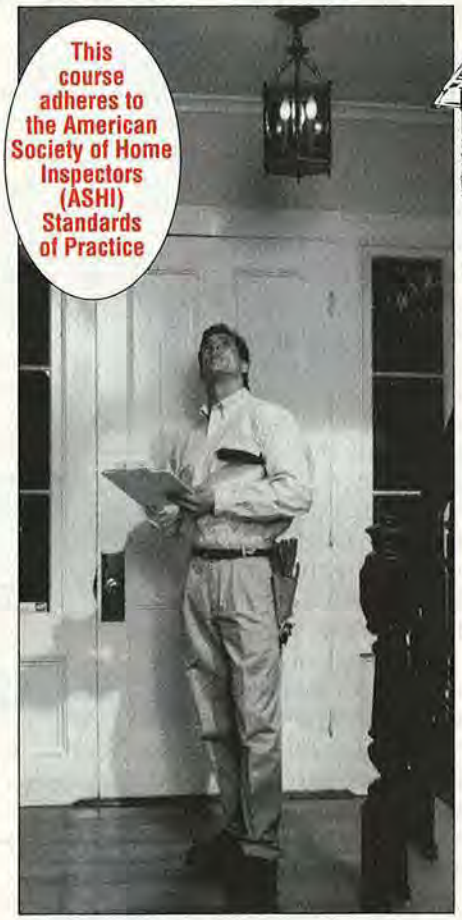

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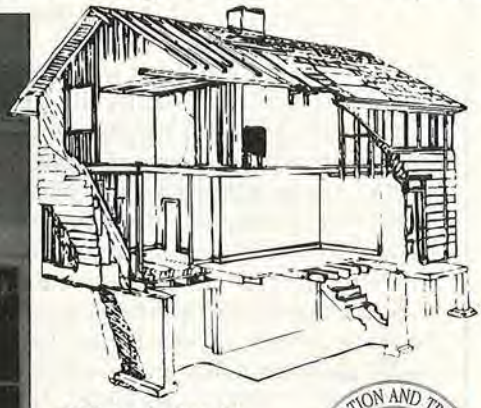

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How to rip gluing edges on a tablesaw

I am a beginning woodworker, who recently glued several pieces of wood together to form a panel. However, I had a lot of trouble in ripping straight gluing edges on my tablesaw. Do you have any suggestions that would help me with this?

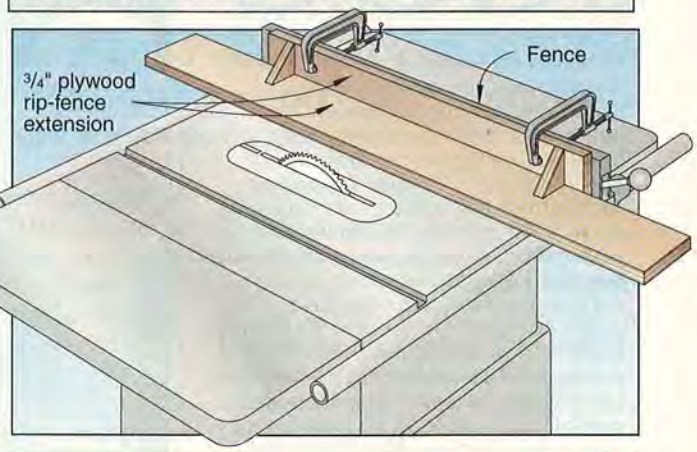
—John H. Roland, Wyomissing, Pa.

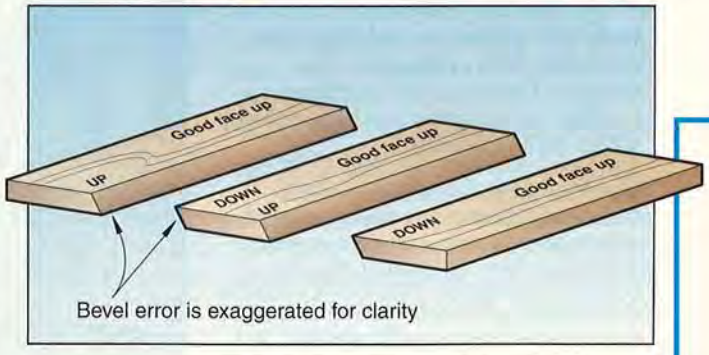
We sure do, John. Here's what we recommend:

1 Use a sharp, high-quality 40- or 50-tooth carbide-tipped saw blade to rip the straight edge on your lumber. If your saw and rip fence are adjusted correctly, these blades will leave a smooth surface ready for gluing. To find out which circular-saw blades work the best for this, see our reviews in the September 1993 and December 1994 issues.

2 Add a rip-fence extension to your tablesaw to provide more support to the board being ripped. Make the extension guide-rail from a 4- to 6-foot length of ¾"-thick × 6"-wide plywood. Fasten this guide rail to a 1×4 with screws, with the factory-ripped edge of the plywood opposite the 1×4. Then clamp the extension to your rip fence.

3 Lay out the boards best-face up on a flat surface. Arrange them for the best match by color and grain. Then mark one side of each joint with "up," and the other side of the joint "down." Follow this by ripping the gluing edges on the tablesaw. To rip the edge marked "up," place the board on the tablesaw with its best face up. To rip the edge marked "down," place the board on the saw with its best face down. Glue an "up" edge to a "down" edge at each joint to compensate for any variation from 90° in the saw blade setting.

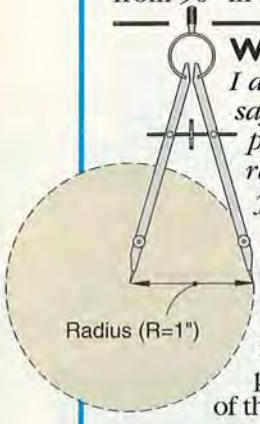




What's a radius, anyway?

I am ready to start on a few projects that say to "mark a 1" radius." I have a compass, but I'm not sure how to mark a radius or where to measure from. Do you have any advice for me?

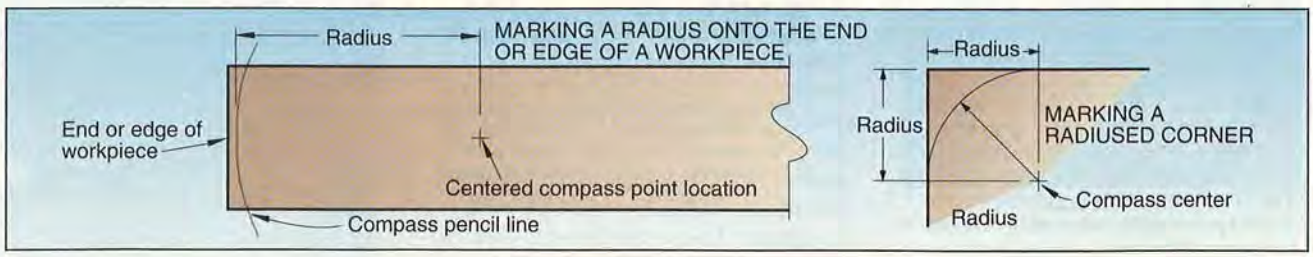
—Mike Brady, Grayslake, Ill.



Yes we do, Mike. A radius equals the distance from the center of a circle to its outside rim. When setting a compass, measure the radius from the point of the compass to the tip of its lead.

To draw a radiused edge on a panel or tabletop, mark a line back from the edge of the workpiece at a distance equal to the radius. Place the point of the compass on this line centered between top and bottom surfaces. Then, move the pencil in an arc to mark the curve of the edge as shown *below left*. Cut the edge to shape with a router.

To mark a corner radius, draw lines at a distance equal to the radius down from the top and in from the side. Place the point of your compass at the intersection of these lines, and draw the radius as shown *below right*.

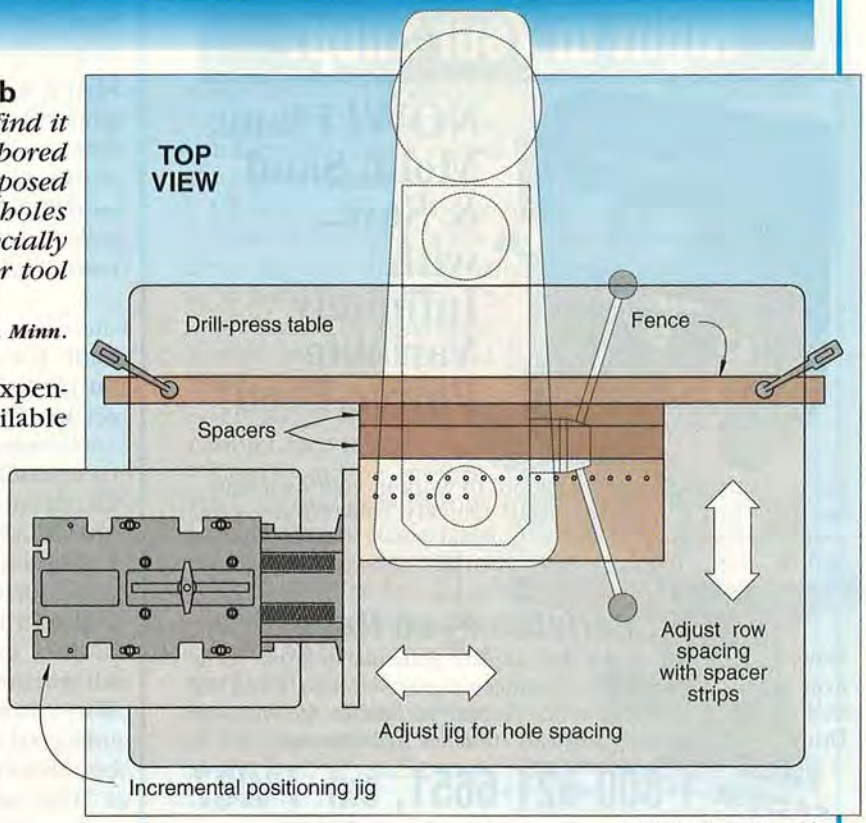


One good way to ease a boring job

I want to make a cribbage board, but I find it hard to believe that all those holes are bored separately. I know woodworking is supposed to be relaxing, but drilling all those holes would drive me to the funny farm, especially if I made several boards. Is there a jig or tool that would help in this task?

—George Kerber, Maple Grove, Minn.

Wouldn't it be nice if there was an inexpensive, multi-spindle boring machine available for a job like this? Unfortunately, there's not, so you have to drill holes the old-fashioned way—one at a time. You can make the job a bit easier by using an Incra Jig, JoinTech Universal Positioning Machine, or another incremental positioning device, combined with a drill press fence and spacer strips to locate the holes (see drawing *right*). This will eliminate the need to measure and then "eyeball" the placement of each peg hole. Drill the holes with a ⅛" brad-point drill bit.



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ASK WOOD

Continued from page 79

Here's some information on universal motors

I am considering buying a tablesaw with a universal motor. However, I am concerned about the reputation these motors have for making noise. Just what are the advantages and disadvantages of a universal motor. Why are they noisy?

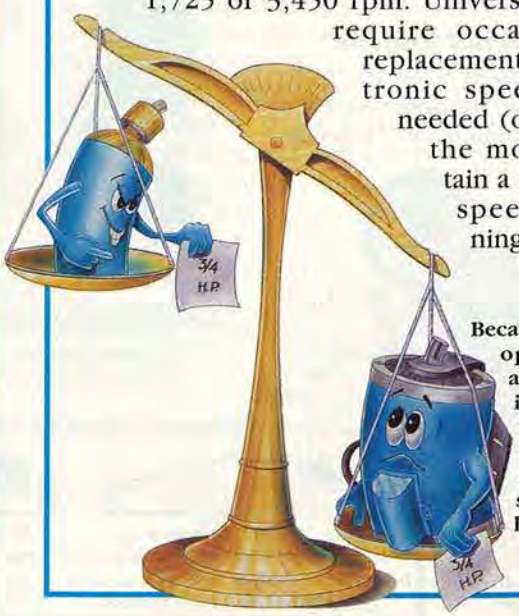
—Paul Kaufmann, Las Vegas, Nev.

Paul, for an answer, we contacted Gene Holladay, an electrical engineer and avid *WOOD®* magazine reader. Here's what Gene had to say:

"Universal motors get their name from their ability to operate on both alternating and direct current. These motors generally run at a higher speed than an induction motor running at the same applied voltage and workload. Because of the work energy produced by this higher operating speed, (over 20,000 rpm for a router under no load), universal motors can be made smaller and weigh less than induction-type motors of the same continuous horsepower. For this reason, manufacturers use universal motors in portable hand tools and smaller bench tools.

"The speed of universal motors can be electronically adjusted, and convenient variable-speed controls are often added to tools that use this type of motor. This makes speed changing much easier than the belt-and-pulley sytems most often used with single-speed induction motors (compare speed changing on your universal-motor powered variable-speed drill with your induction-motor powered drill press).

"However, the universal motor design does have some drawbacks. The high running speed of the motor components, combined with a larger volume of air flow through the motor and its fan, creates more noise than induction motors, which run at 1,725 or 3,450 rpm. Universal motors also require occasional brush replacement, and an electronic speed control is needed (often built into the motor) to maintain a constant motor speed while running under load."



Because of its higher operating speeds, a universal motor is smaller and weighs less than an induction motor of the same continuous horsepower.

Random-orbit vs. finishing sander

I am considering buying a new sander, which I will use to prepare table- and desktops for finishing. I've worked with a random-orbit sander in the past, and I liked the speed at which it removed material. However, I'm also considering a ½-sheet finishing sander. What are the advantages of each type of tool?

—John Lucier, Winslow, Maine

For an answer, John, we talked with Jan Svec and Chuck Hedlund, the guys who build most of the projects here at *WOOD®* magazine. And we found that each of our builders has his own preference.

Jan told us his choice for sanding large, flat surfaces is the ½-sheet sander. He feels that the large sanding area of these tools produces a smoother and flatter surface than does the smaller random-orbit sander. The ½-sheet sanders also use regular sandpaper rather than the more costly abrasive discs of the random-orbit sander (one abrasive disc costs as much as one full-sheet of sandpaper). And because of their rectangular shape, ½-sheet sanders also can sand farther into a corner than can the round random-orbit sanders.

Chuck prefers to use an in-line random-orbit sander with a pad brake for much of his work. He likes the fact that this sander will remove material at a faster pace than the ½-sheet sander. And it works well in situations where you have to sand cross-grain joints, such as in finishing cabinet face frames.

In-line random-orbit sander

Chuck said he prefers the "second-generation" in-line random-orbit sanders over the right-angle sanders because the in-line tools are easier to control on a flat surface. And the pad brake reduces the chance of leaving swirling marks at the end of each sanding stroke.

Right-angle random-orbit sander

Continued on page 89

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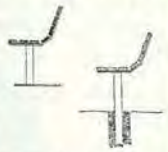

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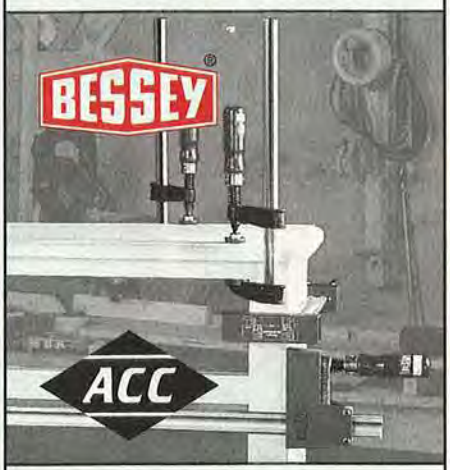

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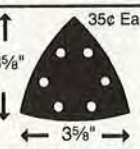

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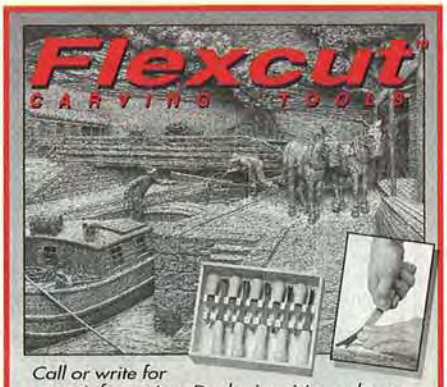

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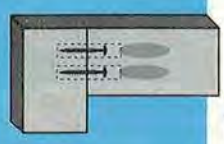

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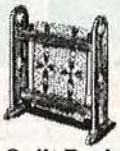

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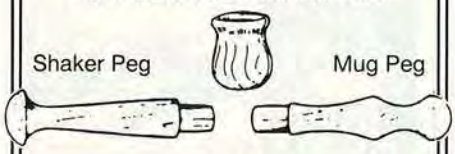

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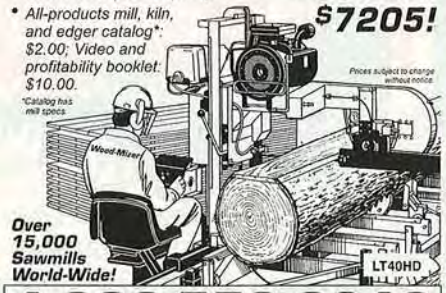

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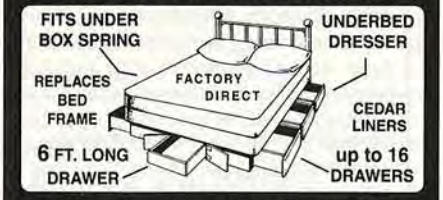

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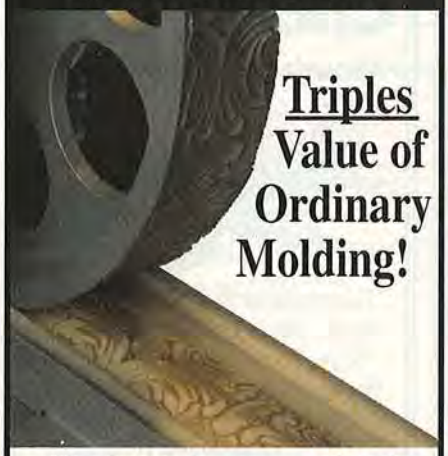

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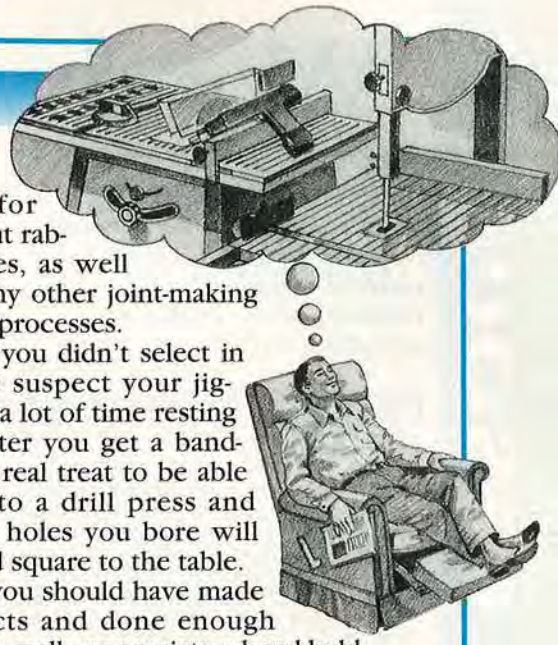
Continued from page 81



Which tools should I start my shop with?

I am in the process of building a small workshop. Which tools would you recommend I buy to get started in woodworking?

—Lee Torbush, Dallas, Ga.

Wow, what a question, Lee! We checked with some of our staff members for their opinion, and received about as many of those as we have people. However, here's the consensus list of power tools we came up with:

1 Start your shop with a tablesaw, either stationary or benchtop, depending on the space in your shop. This machine will allow you to do accurate crosscutting and ripping.

2 Next, buy a drill press or a band saw. If you want to do a lot of projects that involve curved edges, choose the bandsaw, and buy a hand power drill to make holes. Otherwise, buy a drill press for its ease of use, accuracy, and ability to help you make joints, such as mortises and dowel joints. A handheld jig saw can serve as a temporary curve cutter.

3 Buy a router. And build a router table. This combination will allow you to mold edges of boards, cut grooves for spline joints, cut rabbets and dadoes, as well as perform many other joint-making and decorative processes.

4 Buy the tool you didn't select in number 2. We suspect your jigsaw will spend a lot of time resting on the shelf after you get a bandsaw. And it's a real treat to be able to take work to a drill press and know that the holes you bore will be accurate and square to the table.

5 By this time you should have made enough projects and done enough hand-sanding to really appreciate a hand-held power sander. Get a 5" random-orbit sander or a ¼-sheet finishing sander to ease the clean-up work on your projects.

6 Buy a jointer. This tool can accurately straighten edges and flat-plane the faces of a board. While you often cut acceptable glue joints with a tablesaw and a good quality sawblade, a jointer will make this process easier and more accurate.

Continued on page 93

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WOODWORKER'S RESOURCE

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WOODWORKER'S RESOURCE

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ASK WOOD

Continued from page 89

Wants information on router speeds

I would like to know which speed to set my router as I use it on different woods. Can you help me with this?

—Fred Sullivan, Houston

Fred, for an answer, we talked with Chuck Hedlund, *WOOD*® magazine's project builder. Here's some things he considers when adjusting router speed:

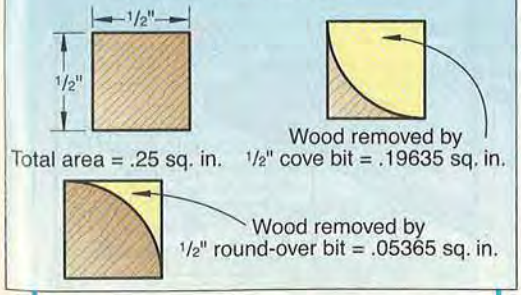
1 "The density of the wood will affect the speed setting of the router. Maple and cherry, for example, will develop burn marks more quickly than will oak. Slow down your router when dealing with these denser woods.

2 "The profile and size of the router bit influences the speed setting of the router. Larger bits require slower speeds than do small ones. And the more wood removed by a bit, the slower the speed should be." (For example, a ½" radius cove bit will remove almost 2¾ times as much wood as will a ½" round-over bit when cutting at full depth, as shown *below*.) "A good starting point for large-profile bits is in the 8,000 to 10,000 rpm range.

3 "A sharp router bit will cut smoother than a dull one, and can consequently be operated at a higher speed with less chance of burning the wood."

Chuck recommends testing router-bit speed settings on a piece of scrapwood. This will give you an idea of how each bit will perform on that wood.

How the router-bit profile affects the amount of wood it removes



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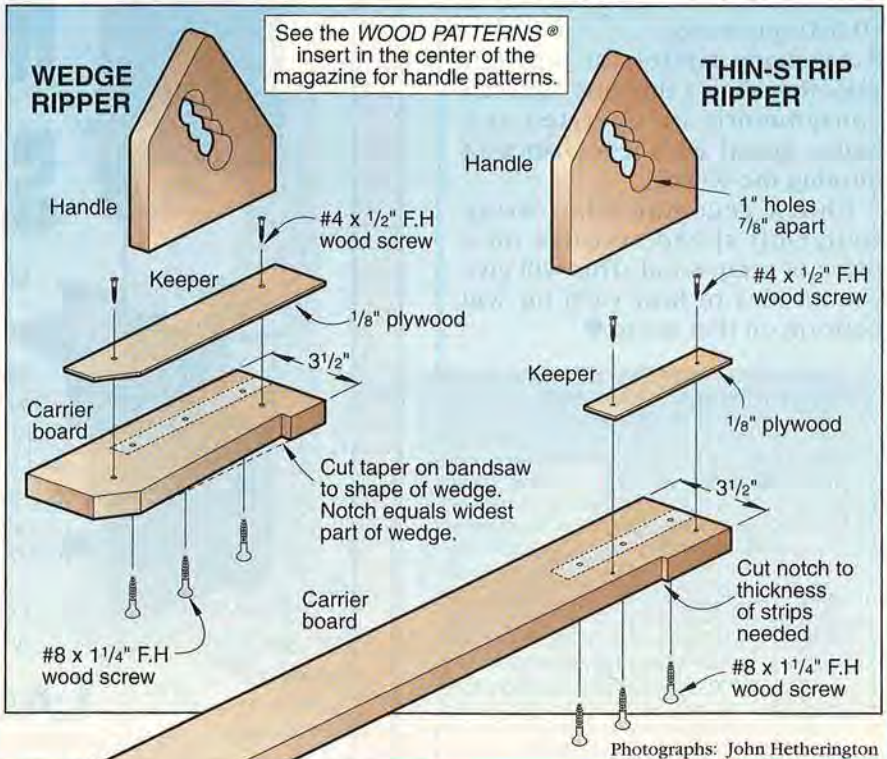
To use either jig, set the distance from the fence to the inside edge of the blade equal to the width of the rear of the jig. Then, place the workpiece in the notch in the jig, and push the workpiece and the jig together past the blade. With the fence in the same position, repeat the cutting operations as necessary to get identical wedges or thin strips.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Keeper
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Carrier board
#8 x 1 1/4" F.H wood screw

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Stop extension-cord tangles with this pail

Having fought with tangled extension cords for many years, I was eager to try out the Reel-A-Pail. This device keeps cords neat by winding them inside a large plastic bucket.

The Reel-A-Pail comes in three sizes: RAP-50, RAP-100, and RAP-200. The numbers correspond to the length, in feet, of 12-gauge electrical cord held within the pail. These pails also will hold 25', 50', and 100' lengths of ⅜"-diameter air hose.

I've been using the RAP-100 on several remodeling job sites for the last six weeks. It saves me a few minutes at the beginning and end of every work day, but more importantly, it keeps the excess cord stored out of the way. And with the cord in the bucket, it's much less likely to get nicked, or cause somebody to trip.

If I could change one thing about the design, I would put a larger extension on the base that you could stand on when reeling the cord in. As it is, you need to use both feet and stand over the bucket when cranking the reel.

—Tested by Rick Markley

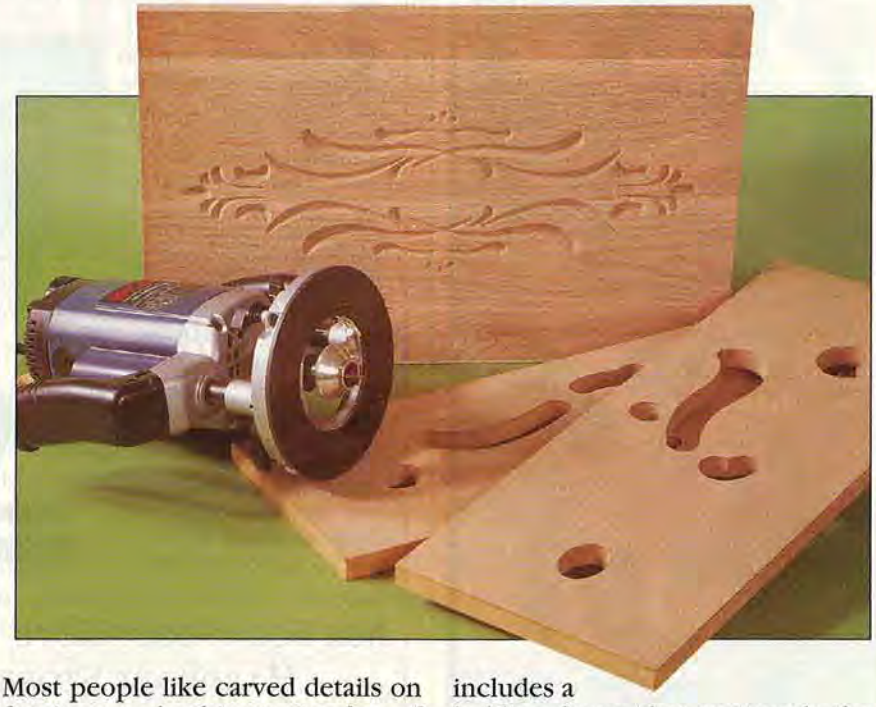
PRODUCT SCORECARD

Reel-A-Pail RAP-100

Performance	★ ★ ★ ★ ☆
Price	$50
Value	★ ★ ★ ★ ☆

Reel-A-Pail, P.O. Box 666, Cokato, MN 55321. Call 800/450-6507.

Router fixture turns anyone into a carver



Most people like carved details on furniture and cabinets. But few of us have the time to acquire the skills to make these carvings. Now, CMT has unveiled a 3D Router Carver that enables you to "carve" intricate patterns in minutes using a plunge router.

The secret of this system is the way the V-groove router bit and cone-shaped guide bushing track in the particleboard templates. As the opening in the template gets wider, the router bit moves downward so the V-groove gets wider. As the opening narrows, the bit moves up and the groove narrows. Result: a three-dimensional carved pattern.

CMT currently offers 46 different template sets including designs for cabinets, entry doors, and rosettes. Some patterns require just a single template that you flip and turn around several times to produce a symmetrical pattern. More complicated designs use a series of two or three templates. To keep the templates correctly aligned during replacement and repositioning, the company includes a holding frame that surrounds the template. The templates and template sets cost from about $25 to $74. The cone-shaped bushing and V-groove bit cost $99.40.

In my tests of this system, I found it no more difficult than routing any pattern with a bearing- or bushing-guided bit. What really impressed me is that it took just 6 to 7 minutes to complete the pattern in the photograph *above*. Beat that with a mallet and gouge! The initial cost of the bit and a template set may be too high to justify for a single project. But if you plan to carve multiple panels or projects, the 3D Router Carver proves well worth the price, and can give your projects tremendous appeal.

—Tested by Dave Henderson

PRODUCT SCORECARD

3D Router Carver

Performance	★ ★ ★ ★ ★
Price	see text
Value	★ ★ ★ ★ ★

CMT Tools, 310 Mears Blvd., Oldsmar, FL 34677. Call 800/531-5559.

Continued on page 98

Print this article

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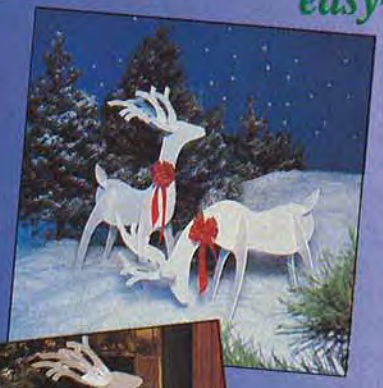

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Continued from page 96

New perforated hardboard hooks won't fall out

You can't beat perforated hardboard for hanging tools, but having your hooks follow the tool off the wall gets aggravating. Talon Toolholders, a much-improved line of nylon holders, anchor themselves firmly.

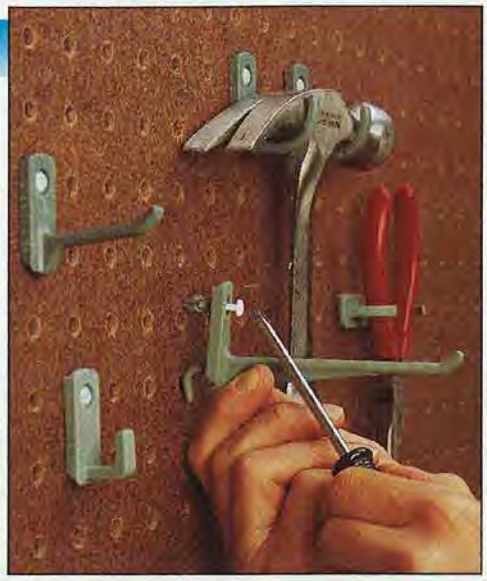
These tool holders have two pegs on their backsides. One is curved down, and the other is a split shaft with a screw threaded into it from the front. When you push the screw in, the split peg spreads out and grips the back side of the perforated hardboard much like a hollow-wall fastener.

The company offers seven models of tool holder to fit ¼" holes, including short and long bars, a curved hook, a short hook, an angled bar, a pliers holder, and screwdriver holder. These cost more than the regular steel holders, but they're less expensive than Windsor Hooks (a steel hook with a steel screw that holds it to the board).

The most unique aspect of the Talon Toolholders is that you can remove and reposition them by backing out the plastic screw. Pulling the split peg through the hole causes a bit of tear-out, but less than any other anchored-hook system except the Windsor Hooks.

When removing some of the hooks, though, I had to use a very light touch to keep the screw threads in contact with their mating surfaces on the back of the peg. This was a tricky maneuver, but, as long as you don't move your hooks around a lot, this shouldn't be a problem.

—Tested by Tom Jackson



PRODUCT SCORECARD

Talon Toolholders

Performance	★ ★ ★ ★ ☆
Price	$.49 to $.69 each
Value	★ ★ ★ ★ ☆

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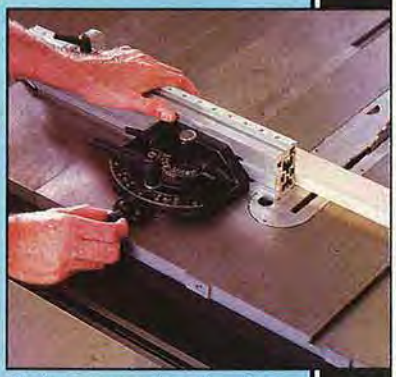

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0224-1	3/8" Drill 4.5 amp magnum	227	128
0234-1	1/2" Drill 4.5A mag 0-850 rpm	237	139
0235-1	1/2" Drill w/keyless chuck	237	139
0244-1	1/2" Drill 4.5A mag 0-600 rpm	237	139
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	198	119
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6547-1	6546-1 w/bits, 1/4" chuck, & cse	176	105
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6490	10" Mitre Saw	444	259
6491	6490 w/ carbide blade & bag.	532	325
6494	10" Compound Mitre Saw	444	319
0431-1	12V Drill w/ 2 batteries	385	229
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FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	42
LU82M010	Cut-off 10"	60	93	45
LU84M011	Comb 10"	50	78	42
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping 10"	24	69	38
LU73M010	Cut off 10"	60	84	45
LU87M010	Thin Kerf 10"	24	72	42
LU88M010	Thin Kerf 10"	60	88	45
LU98M010	Ultimate 10"	80	128	68
LU91M010	Compnd Mitre 10"	60	88	54
F410	Quiet Blade 10"	40	95	49
F810	Quiet Blade 10"	80	135	74
TK303	7-1/4" Finishing	40	38	25
TK906	10" Combo	50	53	32
SD308	8" Dado - Carbide		230	119
SD506	6" carbide w/case & shims		292	155
SD508	8" carbide w/case & shims		344	168
F10	2-1/8" x 3/4" Biscuit 1000 Qty		43	29
F20	2-3/4" x 1" Biscuit 1000 Qty		45	29
FA	Assorted Biscuits 1000 Qty		45	29
FB100	16 piece Forstner Bit Set		338	189
94-100	5 pc. Router Bit Door System		320	159
TR215	10" Slide Cmpd Mitre Saw		688	369
BF3	NEW Router Table		495	289

The following tool has a $20.00 rebate thru 5/31/96

FT2000E	3-1/4 HP v/sp Plunge Router	410	205

The following tools have a $30.00 rebate thru 5/31/96

JS100	Biscuit Jointer w/ case	334	168
JS102	Biscuit Jointer w/fence & case	355	179

MAKITA TOOLS

Model	Description	List	Sale
6172DWE	3/8" v/spd Drill Kit w/ 2 batt	220	109
5090DW	3-3/8" Saw Kit 9.6 volt	270	148
ML900	Incandescent Flashlight 9.6V	Sale	37
DA391DW	3/8" angle Drill Kit 9.6 volt	312	179
6095DWE	9.6 volt Drill Kit w/2 batteries	270	139
6095D	6095DW Drill only & case	Special	79
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28

NEW CORDLESS DRILLS WITH HIGH CAPACITY BATTERIES

6202DWG	9.6V 3/8" Drill Kit w/ LED batt	390	219
6212DWG	12V 3/8" Drill Kit w/ LED batt.	412	228
6312DWG	12V 1/2" Drill Kit w/ LED batt.	432	239
6201DWHE	9.6V 3/8" Drill Kit w/ 2 batt.	351	175
6211DWHE	12V 3/8" Drill Kit w/ 2 batt.	368	185
6311DWHE	12V 1/2" Drill Kit w/ 2 batt.	399	205

SUPER CORDLESS SPECIALS

6073DW	7.2V cdls Drill Kit. Variable speed & clutch. Complete with battery, charger, & case.	Super Sale	99
6012HDWE	9.6V cdls Drill Kit. 2 speed & clutch. Complete with 2 batteries, charger, & case.	Super Sale	119
T220DW	9.6 volt Stapler Kit. Complete with battery, charger, & case.	Super Sale	99

5007NBA	7-1/4" Saw w/electric brake	263	138
9900B	3" x 21" Belt Sander w/bag	344	179
9924DB	3" x 24" Belt Sander w/bag	329	189
4301BV	Orb. var. spd Jig Saw 3.5A	292	155
JR3000V	var. speed Recip Saw w/case	252	139
9820-2	Blade Sharpener	394	215
N1900B	3-1/4" Planer with case	244	134
N9514B	4" Disc Grinder 4.6 amp	111	65
B04552	1/4 sheet Pad Sander w/bag	98	55
DA3000R	3/8" Angle Drill	314	185
2708W	8-1/4" Table Saw	585	309
2711	10" Table Saw with brake	1067	599
6405	3/8" Drill Rev. 0-2100 rpm	112	68
6510LVR	3/8" Drill Rev. 0-1050 rpm	168	98
6013BR	1/2" Drill Rev. 6 amp	280	149
9401	4" x 24" Belt Sander w/bag	378	239
5007NB	7-1/4" Circular Saw 13 amp	232	124
5007NBK	5007NB Saw w/ plastic case	Sale	129
LS1011	10" Slide Compound Saw	946	479
LS1211	12" Slide Cmpd Saw	1550	795
3901	Plate Joiner Kit	372	209

SENCO AIR NAILERS

SFN1+	Finishing Nailer 1" - 2" w/ case	448	335
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	New Pinner w/cse 5/8 -1-5/8"	399	278
SKS	Stapler 5/8" - 1-1/2"	390	275
SN70	Fram. Nailer Clip Hd 2"-3-1/2"	690	459
SN60	Fram. Nailer-Full Hd 2"-3-1/2"	638	449
SN65	15% more power than SN60	709	479
SFN40	NEW Finish Nailer 1-1/4 - 2-1/2	571	389

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	339
RN45	Coil Roof Nailer 3/4 - 1-3/4"	845	369
N60FN-2	Finishing Nailer	650	335
BT35-2	Brad Tacker 5/8" - 1-3/8"	275	155
BT35-2K	BT35-2 w/ case, oil, & brads.	299	165
CWC100	1 HP Pancake Compressor	463	289
MIIIFS	Flooring Stapler 15 gauge	931	529
S32SX-1	Finish Stapler - 1/2" - 1-3/8"	275	155
S32SX-1K	S32SX-2 with case & oil	269	165

SKIL TOOLS

2735-04	12 volt cordless Drill Kit	249	144
2736-04	2735-04 with keyless chuck	269	148
3400	10" Table Saw - Bench Top	270	189
77	Famous 7-1/4" Worm Drive Saw	Sale	144
77M	NEW 77 Mag Worm Saw - 2 lbs lighter than Model 77	Sale	159

PANASONIC CORDLESS

EY6181CRKW	9.6V Drill Kit w/ 2 batteries, 1 hour charger, & case	305	165
EY6181EQK	9.6 volt Drill with 15 min. charger, case & Ironman battery	315	169
EY6100CRKW	12 volt Drill Kit with 2 batteries, 1 hour charger, & case	358	188
EY6100CQKW	Same as EY6100CRKW but has 15 minute charger	420	198
EY6100EQKW	12 volt Drill kit with 2 Ironman batteries, 15 min. charger, & case	375	199
EY6101SQK	12 volt 1/2" Drill w/ 15 min. charger, diagnostic battery, & case	420	249

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit	849	548
IM325	Impulse Framing Nailer Kit	849	548

WAGNER PAINT & SPRAYER PRODUCTS

375E	Airless System	195	164
505	High performance Airless Painter	440	369
HVLP	Fine coat finishing HVLP System	195	159
CS2000P	Pro fine finish HVLP System	339	278

DEWALT TOOLS

Model	Description	List	Sale
DW364	7-1/4" Circ. Saw w/brake	285	158
DW945K	12V cdls Drill Kit w/2 batt	309	189
DW610	1-1/2 HP 2 handle Router	274	152
DW411	1/4 sheet Palm Sander	97	58
DW100	3/8" Drill, 4 amp,0-2500 rpm	118	68
DW682K	Biscuit Joiner with case	429	219
DW705	12" Compound Mitre Saw	706	359
DW625	3 HP var. spd PlungeRouter	Sale	275
	DW625 comes with FREE Fine Depth Adjuster!		
DW675K	3-1/8" Planer with case	289	164
DW431	3 x 21 v/spd Belt Sander	331	184
DW421	5" Palm Random Orbit Sander	125	79
DW444	6" Ran Orb Sander-PSA pad	266	139
DW423	NEW Palm Ran Orb Sndr-v/spd	170	99
DW443	DW444 w/hook & loop pad	265	139
DW673K	NEW Laminate Trimmer Kit	364	215
DW930K	12V 5-3/8" Trim Saw Kit	370	199
DW935K	NEW 14.4V 5-3/8" Trim Saw Kit	444	237
	DW935K comes with two batteries!		

DEWALT CORDLESS DRILLS

DW952K	3/8" v/spd w/two 9.6V batt	280	145
DW962K-2	3/8"v/sp w/two 9.6V XR batt	324	179
DW972K-2	3/8"v/sp w/two 12V XR batt	352	189
DW904	12 volt flashlight		29.95
DW972K-2	drill & DW904 flashlight	Sale	205
DW991K	3/8"v/sp w/one 14.4V XR batt	370	199
DW991K-2	above drill w/ 2 batteries	Sale	225
DW944KQ	1/2" v/spd w/1 14.4V XR batt	450	235
DW944KQ-2	Above drill w/ 2 batteries	Sale	259
	Above drill kits come w/ charger & steel case!		
DW991KS-2	DW991K drill, DW935 trim saw, & case	Sale	339

HITACHI TOOLS

C8FB	8-1/2" Slide Compound Saw	1400	489
C10FC	10" Mitre Saw	432	209
C10FS	10" Slide Compound Saw	1595	745
P12R	12-9/32" Planer	1470	795
P12RA	Planer/Joiner	1940	995
G12SA	4-1/2" Grinder 6.9 amp	160	79
NR83A	Fram Nailer 2 - 3-1/2 Full Head	700	399
NR83AA	Framing Nailer 2 - 3-1/2	750	425
NT65A	16 ga. Brad Nailer 1 - 2-1/2	610	345
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	750	399
DN10DYK	9.6V right angle Drill Kit	350	159

BIESEMEYER FENCES

B-50	50" Commer. Saw Fence	345	329
T-SQUARE 52	52" Homeshop Fence	279	265
T-SQUARE 40	40" Homeshop Fence	259	235
T-SQUARE 28	28" Homeshop Fence	249	225

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	20.35	12.10	66.95
#1	10"	6"	23.30	12.90	71.95
#2	12"	8-1/2"	26.75	14.90	83.95

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	15.45	8.10	92.50
52	1/2" Black Pipe Clamps	12.90	6.95	74.95

BOSCH

Model	Description	List	Sale
1587VS	Top Hand "CLIC" Jig Saw	292	149
1584VS	Barrel "CLIC" Jig Saw	285	149
	Bosch Metal Case for above Jig Saws	34	32
	Bosch 30 blade assortment for Jig Saws		28.99
	1584VS or 1587VS with steel case and 30 Bosch blades	Sale	189
3270DVS	3" x 21" v/spd belt sander	270	165
1276D	NEW 4" x 24" Belt Sander	379	219
1275DVS	NEW 3" x 24" v/spd Belt Sndr.	379	219
1276DVS	NEW 4" x 24" v/spd Belt Sndr.	408	229
1347AK	4-1/2" Grinder w/cs & access.	185	105
1194VSR	1/2" var. speed Hammer Drill	282	155
1194VSRK	above Hammer Drill w/case	313	169
1609KX	Deluxe Installers kit	405	234
1604A	1-3/4 HP 2 Handle Router	250	142
1604AK	same as above w/cse & acc	318	185
1606A	1-3/4 HP D-handle Router	295	179
1613EVS	2HP v/spd Plunge Router	359	199
1615EVS	3 HP v/spd Plunge Router	505	298
	1613EVS & 1615EVS come with FREE RA1051 Deluxe Router Guide !		
1634VSK	NEW Recip Saw 10.5 amp	225	159
3300K	NEW 12V Drill Kit w/ 2 batt	348	189
3310K	NEW 12V T-handle Drill Kit	348	179
3110K	NEW 9.6V T-handle Drill Kit	320	185
3107DVS	NEW 5" Random Orbit Sander	165	98
3107DVSK	3107DVS with case	195	115
3725DVS	NEW 5" Random Orbit Sander	258	149
3727DVS	NEW 6" Random Orbit Sander	268	154
B3915	NEW 10" Slide Compund Saw	1025	619
B1650K	Biscuit Joiner	289	159
B7000	Corner Detail Sander	122	68
B7001	B7000 w/ variable speed	Sale	89.95
B4050	In Line Jig Saw	199	115
11230EVS	SDS-max 1-1/2" Rtry Hmr	885	525
11231EVS	SDS-max 1-3/4" Rotary Hmr	1336	809
11223EVS	NEW SDS-max 2" Rotary Hmr	1548	929
11224VSR	7/8" SDS Rotary Drill	495	229

AIRY AIR NAILERS

0241SK	Brad Nailer 3/8"-1 9/16"	180	96
0250SK	Brad Nailer 3/4"-2"	296	164
0626SK	1/4" Crown Stapler 3/8"-1"	194	104
0635SK	1/4" Crown Stapler 1/2"-1-3/8"	310	175
EZ-1	Multi-purpose nailer & stapler.	180	98
	Above Nailers come w/case, fasteners, oil & wrenches		
0565T	Angle Finish Nailer 1"-2-1/2"	386	205

PORTA NAILER

401	Porta Nailer complete	265	205
501	Face Nailer complete	265	205

DAVID WHITE

LP6-20	Sight Level package - 20x	310	205
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		265
LT8-300	Level Transit - 26x	695	479
LT8-300P	above Level w/optical plum	821	559
LT6-900	Level Transit - 20x	389	269
ALT6-900A	utomatic Level - Transit -18x	638	429
ALTP6-900A	above Level w/tripod & rod.	708	499
ALP6-18HD	above Level w/tripod & rod	570	385
LL100	NEW Finish Line Laser Level	210	135

RYOBI SPECIALS

RE600	3 HP Plunge Router	500	228
BE321	3" x 21" var. spd Belt Sander	310	148
BT3000	10" Table Saw with stand	1125	529
AP12	12" Bench Planer	884	389
OSS450	Oscillating Spindle Sander	340	159
DC500	Detail Carver	120	64
HT20VSK	NEW Multi Tool	115	59
CD125K	NEW 12V cdlss Drill w/ 2 batt.	175	109

SIOUX TOOLS

8030	3/8" var/spd Drill	250	145
8000	3/8" var/spd close qtr Drill	201	125
690	5" Air Random Orbit Sander	139	132
Msxe6362FE	IN Triangle Sander v/spd	Sale	199
Msx625 FEIN	New Air Triangle Sander	Sale	189
LPN672 PONY	Air Palm Nailer w/glove	Sale	94.99
RTM01 ROTOZIP	Drywall cut out unit	Sale	68.95

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39
	Buy any 6 (can be assort.) deduct 10%		
2601	Wall Jack	167	108
	Lots of 4 deduct additional 10%		

PORTER CABLE

9444	New Profile Sander Kit	205	119
7499	Ultimate Cut-out tool	113	69
690	1-1/2 HP Router 8 amp	260	142
9690	690 Router w/ steel case		159
691	1-1/2 HP Router D-handle	285	158
693	1-1/2 HP Plunge Router Base	320	178
6931	Plunge Router Base	125	79
695	1-1/2 HP Router/Shaper	400	229
696	Heavy Duty Shaper Table	230	135
351	3" x 21" Belt Sander w/o bag	280	159
352	3" x 21" Belt Sander with bag	290	165
352VS	3x21 Belt Sander w/bag v/spd	305	169
360	3" x 24" Belt Sander with bag	365	198
361	3" x 24" Belt Sander w/o bag	345	194
362	4" x 24" Belt Sander with bag	380	205
97751	1/2" v/spd Hammer Drill w/cse	270	158
9118	Porta Plane Kit 7 amp	390	225
505	1/2 sheet Pad Sander	230	128
7549	Top handle Jig Saw 4.8 amp	270	134
330	Speed Block Sander 1/4 sheet	110	62
556	Biscuit joiner w/5556 tilt fence	Sale	139
345	6" Saw Boss 9 amp	190	109
9345	345 comp. w/cse & carb blde	220	128
9647	TIGER CUB Recip. Saw	210	124
9637	Full var/spd Recip Saw 8 amp	270	148
7519	3-1/4 HP Router 2 Handle	445	244
7518	3-1/4 HP 5 speed Router	510	275
7539	3-1/4HP v/spd Plunge Router.	510	269
7399	5.6 amp Drywall Cutout Unit	140	84
7310	5.6 amp Laminate Trimmer	165	98
97310	Laminate Trimmer Kit comp	360	198
7335	5" Rndm Orbit Sndr w/ case	245	135
97355	7335 w/ case & dust pick-up	274	138
7336	6" Rndm Orbit Sander w/ case	250	139
97366	7336 w/ case & dust pick-up	284	144
73333	Dust Collection system	31	24.50
9853K	12V 3/8" Drill Kit w/ 2 batt	280	164
9855	12V 1/2" 2 spd,v/sp Drill Kit	335	178
8500	12V battery for above drills	Sale	45
332	Palm Grip Rndm Orbit Sander	120	74
333	above Sander with dust bag	135	79
334	333 Sander with PSA pad	135	79
550	Pocket cutter with case	330	185
7700	10" "Lazerloc" Mitre Saw	634	345
310	Production Laminate Trimmer	250	145
347	7-1/4" "Framers" Circ Saw	225	129
347K	347 Saw w/ plastic case	250	134
743	347 Saw - left hand version	225	129
743K	743 Saw w/ plastic case	250	134
9743	743 Saw with case	255	139
447	347 Saw with brake	225	134
843	447 Saw-left hand version	245	139
7800	Drywall Sander	585	329
7810	Wet/Dry Vac for above sander	455	259
9737	New Tiger Recipro Saw	290	165

New Porter Cable Pneumatic Nailers

BN125	Brad Nailer -18 ga. 5/8"- 1-1/4"	144	99
BN200	Brad Nailer -18 ga. 3/4"-2"	238	145
FN200	Finish Nailer -16 ga. 3/8"-2"	270	165
FN250	Finish Nailer -16 ga. 1"-2-1/2"	362	225
DA250	Angle Nailer -15 ga. 1-1/4"-1-1/2"	412	249

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FINISHING TOUCHES

A PRETTY PRANCER THE FIRST TIME OUT

WOOD® magazine reader Ron Norris always had an artistic bent, but other than one painting, never put his hand to anything creative until his retirement. "In the publishing business, I used to work with graphic artists and designers all the time," says Ron, 62, of Valley Center, California. "But I was never inspired enough to try to create something on my own."

Then one day, he visited a friend who had just built a wooden rocking horse. That was inspiration enough for Ron.

"I had never carved before, but thought 'I can do that,' and decided to tackle a carousel horse," he recalls. So Ron made a rough drawing, bought some basswood for the body, maple for the legs, carving chisels and a mallet, and then went to work.

It took Ron about 40 hours to carve just the head and neck, shown unfinished *above*. In all, he invested about four months in the project, working a few hours each day for two or three days every week.

When it was completed, Ron entered the carving in a local art show and took second prize in sculpture as well as the popular-choice award. Not bad for a beginner, Ron!

Above: **Ron Norris' painted and polyurethaned full-sized carousel horse features details such as a carved quiver with arrows and turquoise insets on the bridle. Even the "leather" looks real.** ***Above left:*** **The head and neck took about 40 hours to carve. To create his project, Ron used only a mallet and carving chisels, then hand-sanded it all.**

Still time to build a toy for tots

You've got four months left to craft a toy entry for *WOOD* magazine's 1996 Build-A-Toy® contest. The deadline is *September 1*, and it's our biggest contest ever! Your entry benefits needy kids next Christmas, and you'll be eligible for one or more of the $23,000 in tool or woodworking-supply prizes. For contest and prize details, see the October 1995 issue, or write Build-A-Toy, *WOOD* magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Contest entries, such as this firetruck, are auctioned to benefit needy kids.

Now, dream shops for rent

If you're a wanna-be-a-better woodworker and happen to live in the Washington, D.C., or Boca Raton, Florida, areas, you now can rent a dream shop. And for some extra change, hire expert guidance, too.

The Woodworkers Club, with a pilot facility in Vienna, Virginia, and the Florida franchise, offers a state-of-the-art woodworking shop, instructors, classes, and a store for stock and supplies. The store and classes are open to the public. Woodworkers use the shop facilities on a variable-membership menu ($125–$400 annual fee plus $25–$38 a month) or pay-as-you-go basis ($9–$12 per hour).

Mark Wirthlin, the company's founder, has been so encouraged by the public's response that he's planning nationwide franchises. Says Wirthlin, "We're committed to only opening stores that we believe will succeed, based on the right location and owner."

For information, write The Woodworkers Club, 216 Dominion Rd., NE, Vienna, VA 22180. Call 703/255-1044. Fax 703/255-1046.

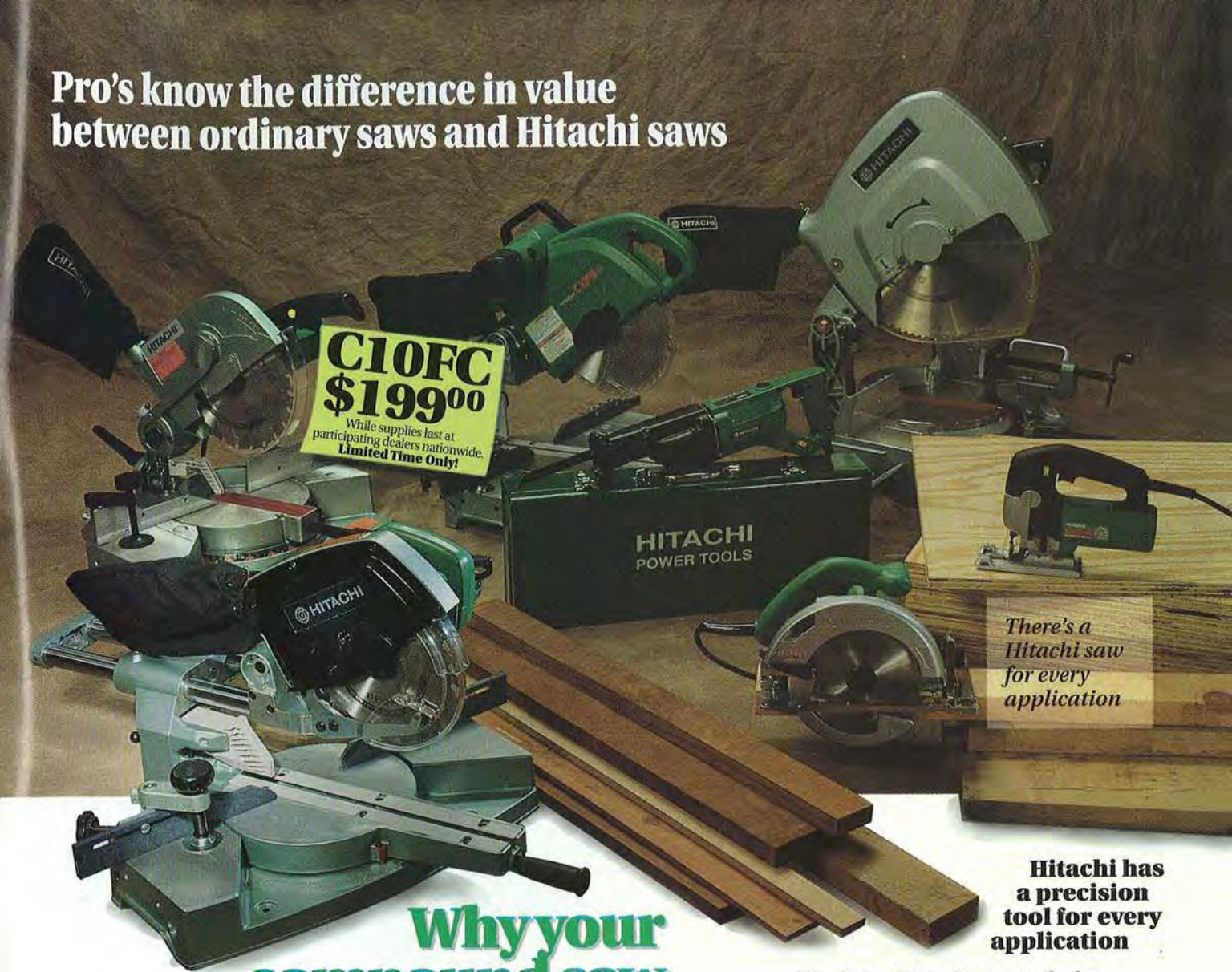
CARVING CONGRESS TURNS 30

For 29 years, carvers from across the continent have converged on Davenport, Iowa, each June for the International Woodcarvers Congress. The oldest competitive show of its kind, the Congress offers hands-on carving seminars as well as an exhibit of the entries vying for $16,000 in awards.

Held at Davenport's Putnam Museum, the Congress runs June 20–23. Seminars, open to members of Affiliated Wood Carvers, Ltd., the organizing body, are held from June 17 to June 22. For more show information, call Larry Yudis, Congress chairperson, at 319/359-9684.

Photographs: Ron Norris; John Hetherington

Pro's know the difference in value between ordinary saws and Hitachi saws



Hitachi has a precision tool for every application

Why your compound saw should be a Hitachi ProSeries compound saw

Precision work begins with precision tools

Your quality materials and careful work deserve the precision and control *which are only possible* with tools engineered and manufactured to the most rigid specifications possible. That's why you should never settle for less than the Hitachi ProSeries.

For example: The **Hitachi C10FC 10" compound miter saw** will add the versatility of *perfect* miter cuts, bevel cuts, and compound cuts to your projects. With the C10FC you can create the precision joints that add beauty and value to everything you make.

Ten *positive* miter stops make it easy to reproduce cuts while the extended base and vise assembly give you *absolute* control over material positioning. Plus, standard features such as a 24-tooth thin kerf anti-kickback blade, dust collection bag, and electric brake make the compact C10FC even more of a value—and those are just a few of the benefits of a *professional* compound saw.

The Hitachi ProSeries includes everything you need to produce quality work, including: **slide compound saws** with *twin rail* slide systems; **dual slide compound saws** that can *easily* cross-cut a 2x12 or compound cut a 2x8; **circular saws** with automatic electric brake systems; **jig saws** with specialized grips which minimize fatigue and maximize control; **reciprocating saws** with full 1-3/16" strokes and powerful 6.5 AMP motors; as well as **drills, sanders, planers, cordless tools,** and even **pneumatic tools.**

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Scrape

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Better Homes and Gardens®

WOOD® PATTERNS®

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JUNE 1996 **ISSUE 88**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

- **Patio table/benches**
- **1880's Wagonette**
- **Four fabulous faces**
- **Floor lamp/coat tree combo**
- **Handle for ripping jig**

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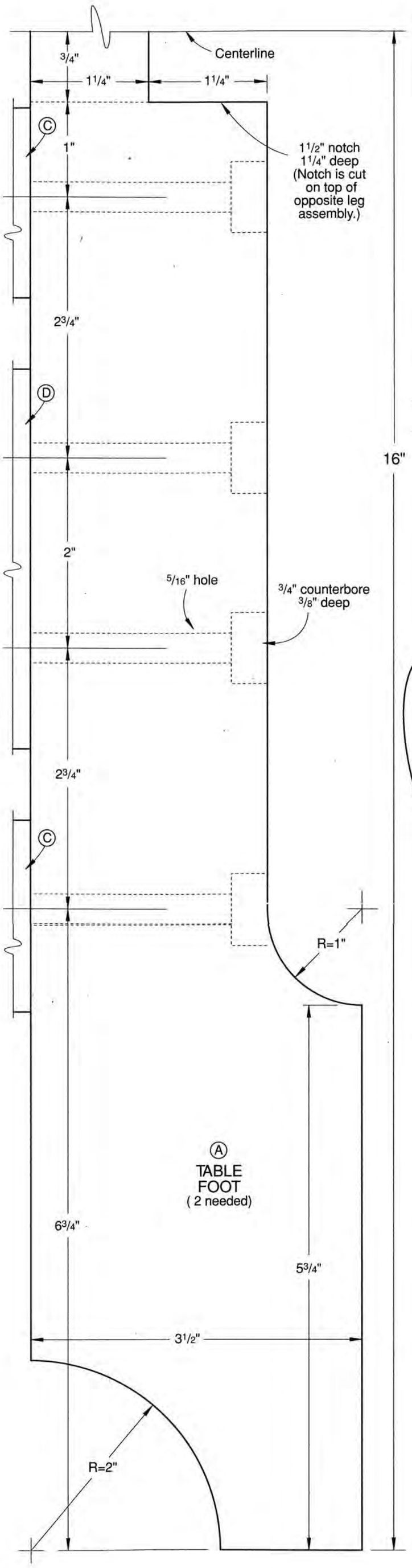

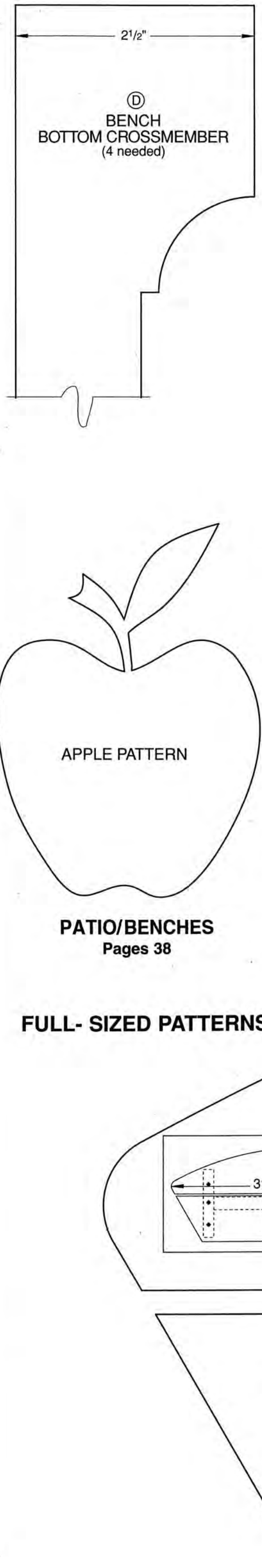

PATIO/BENCHES
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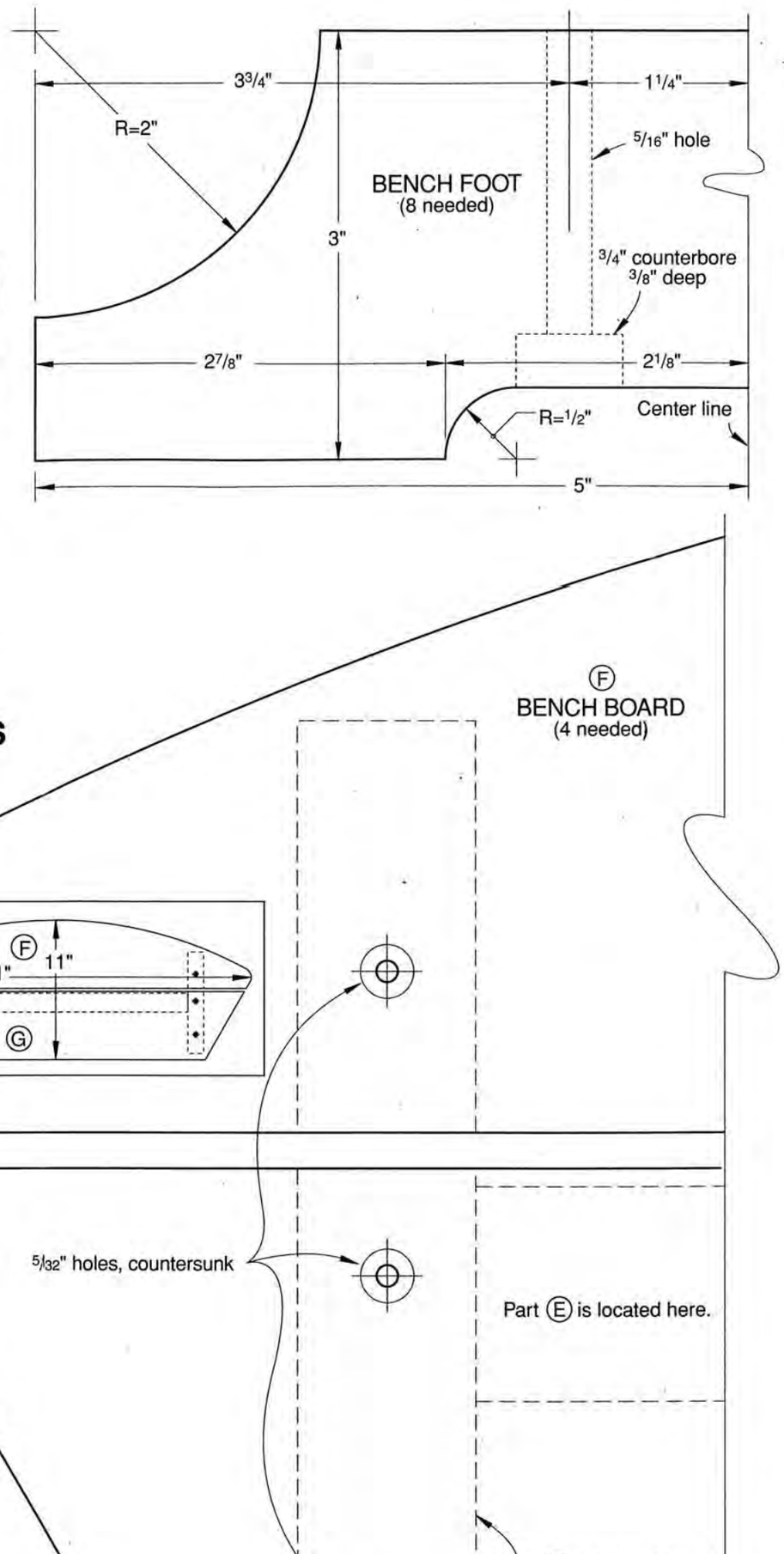

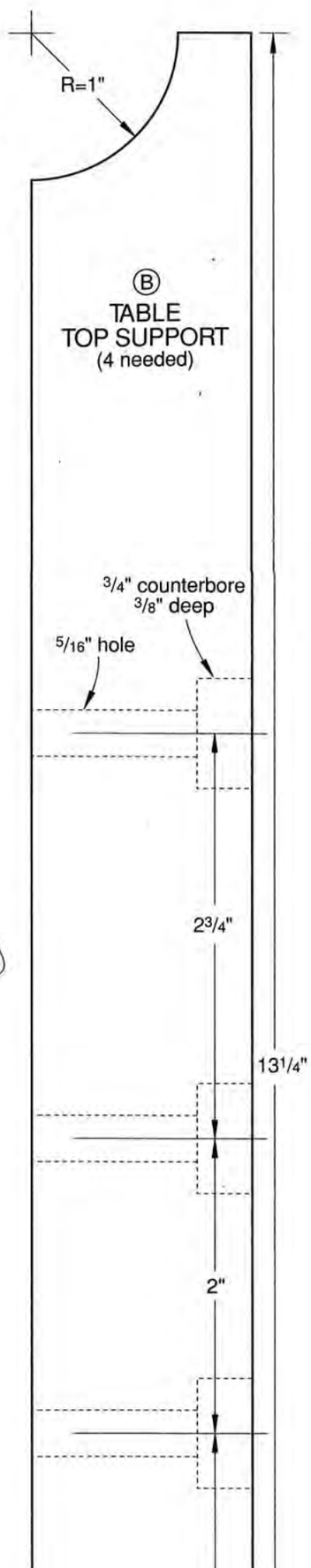

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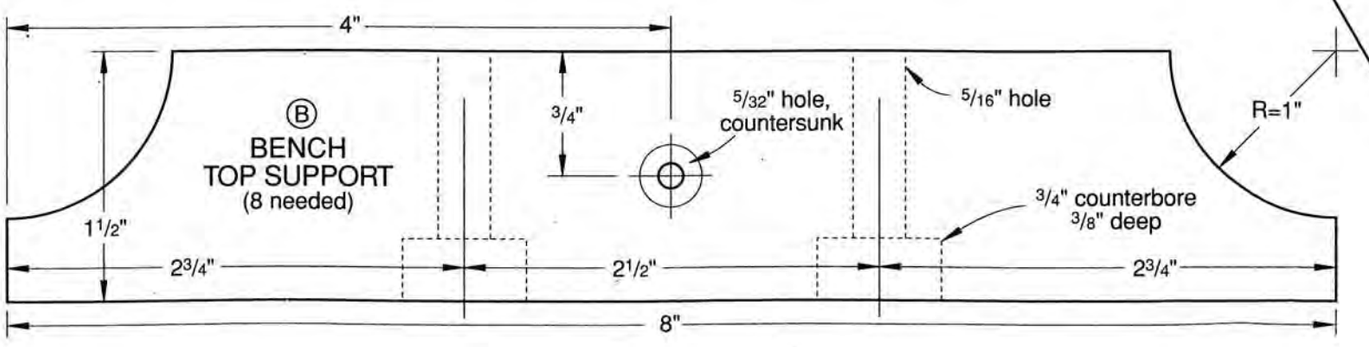
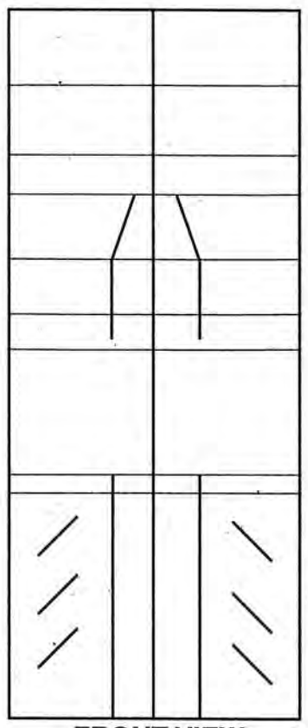
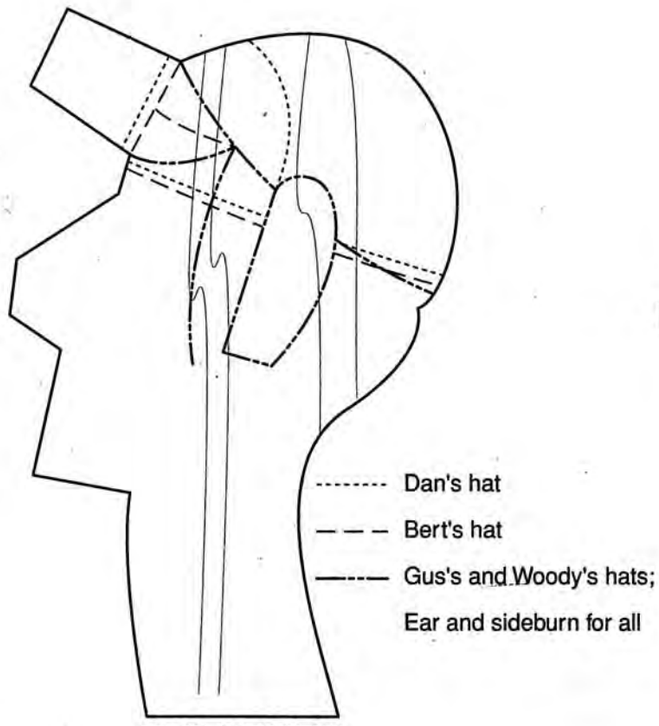
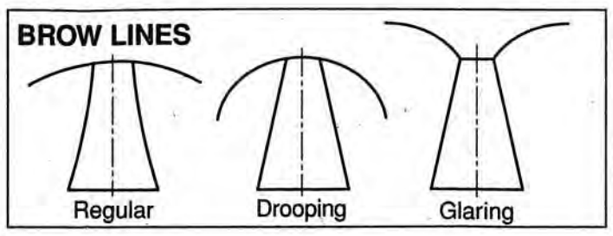


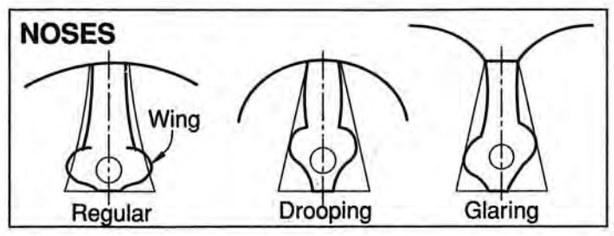


FRONT VIEW



PROFILE VIEW





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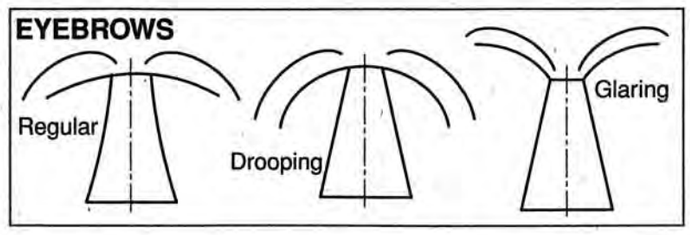

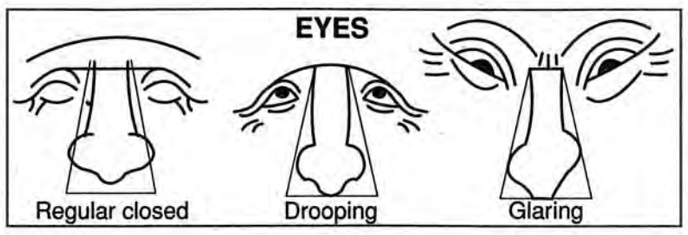

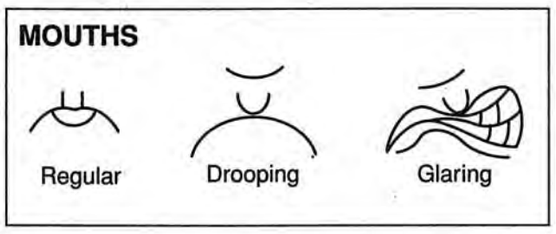

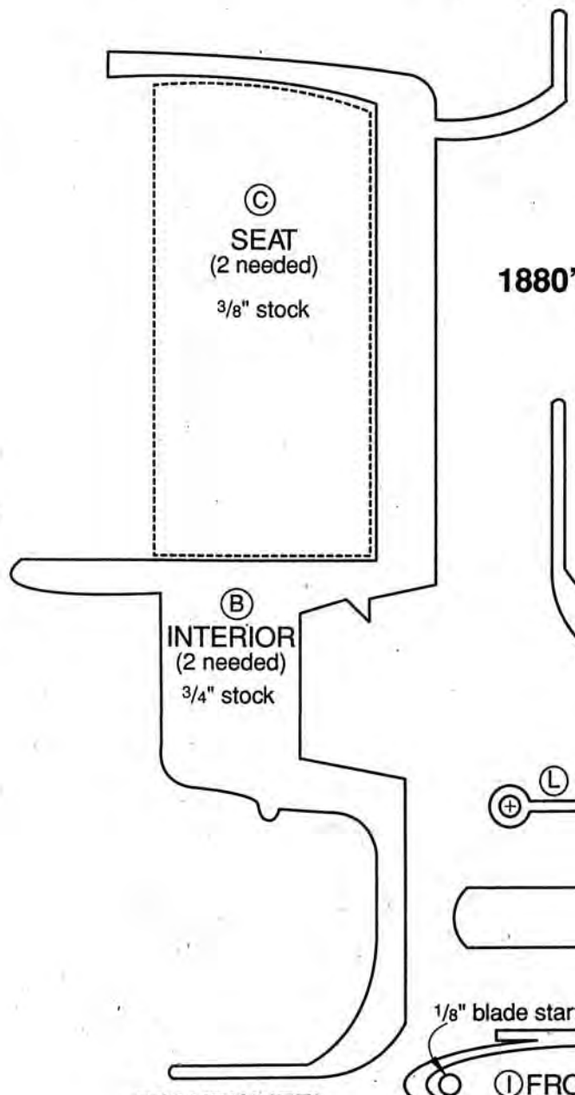

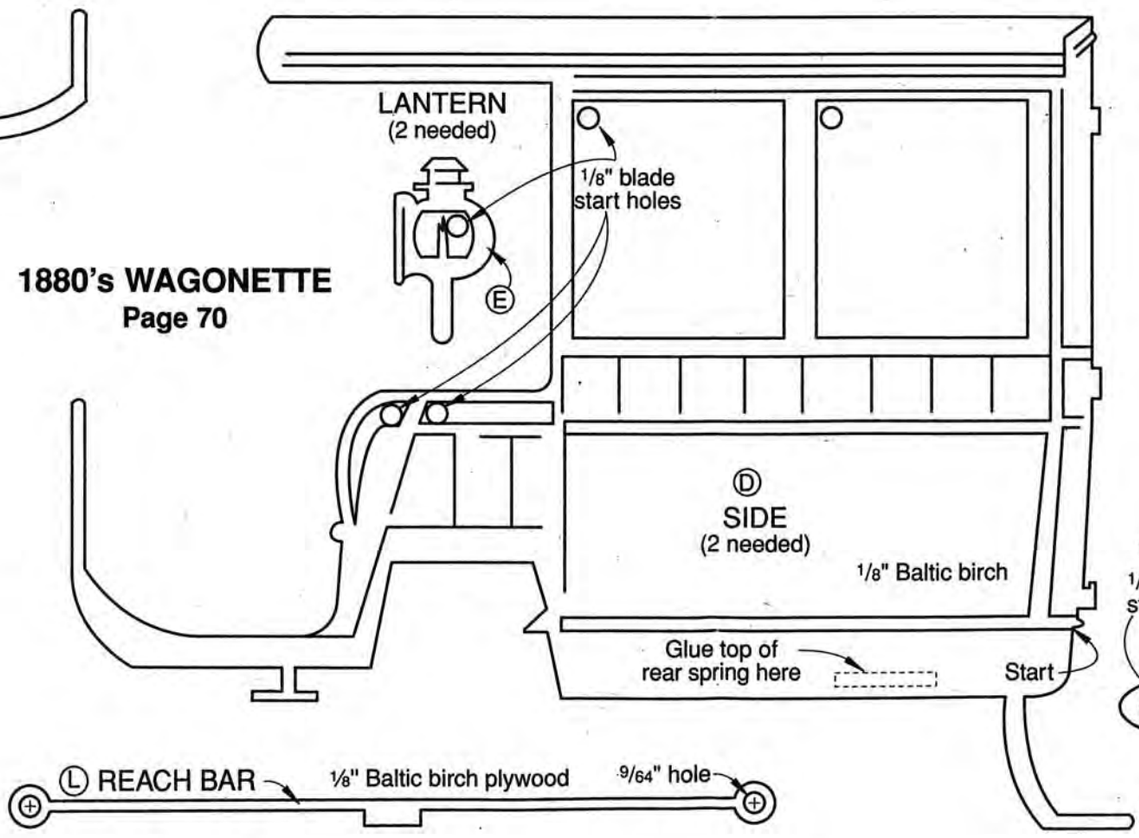

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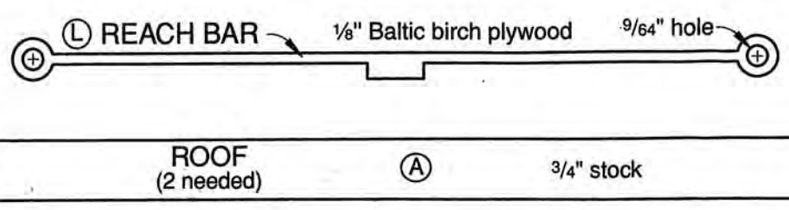
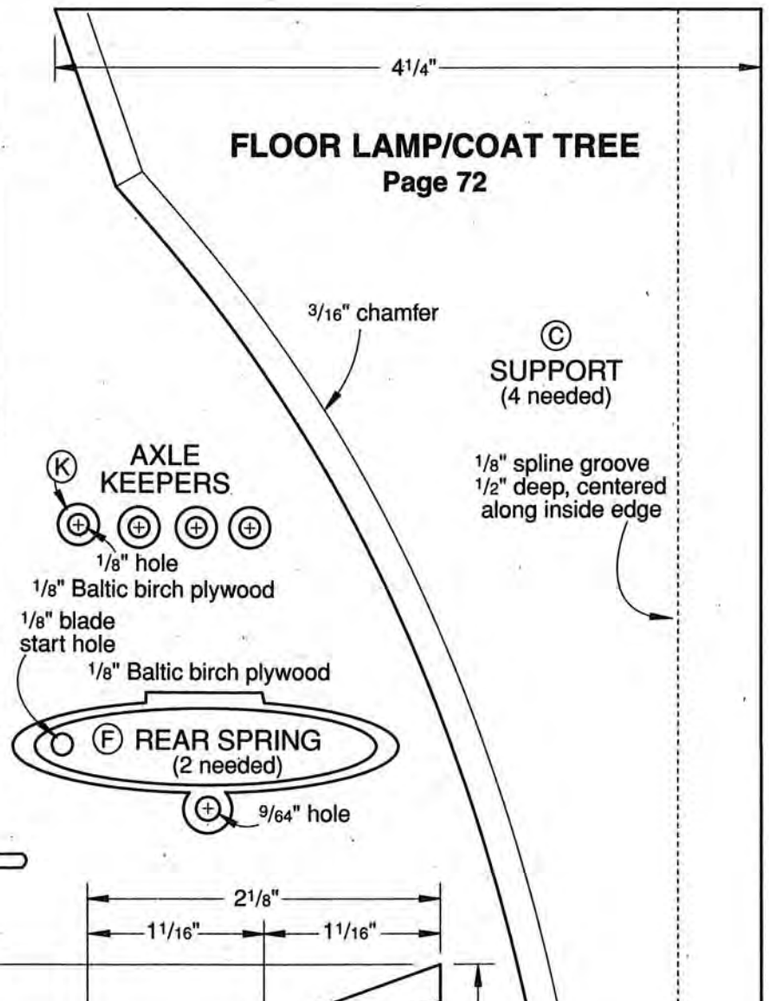
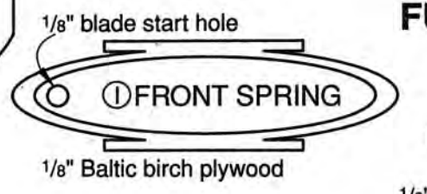
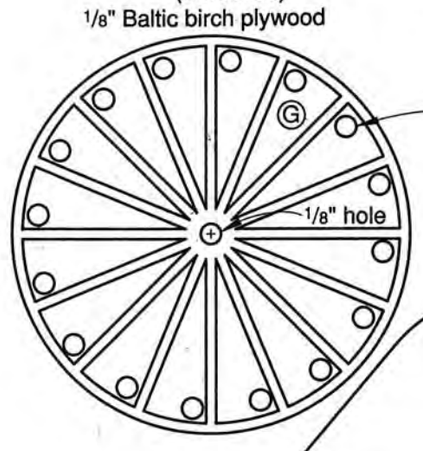
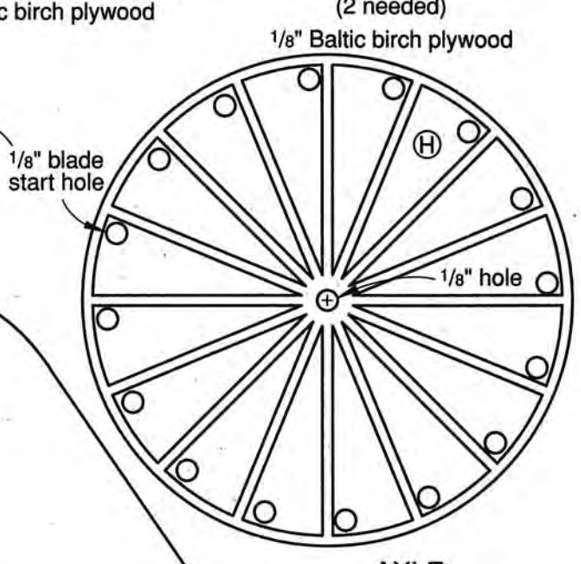


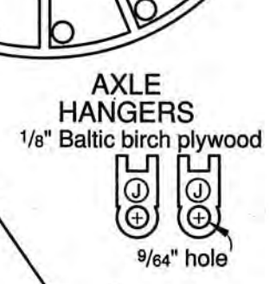
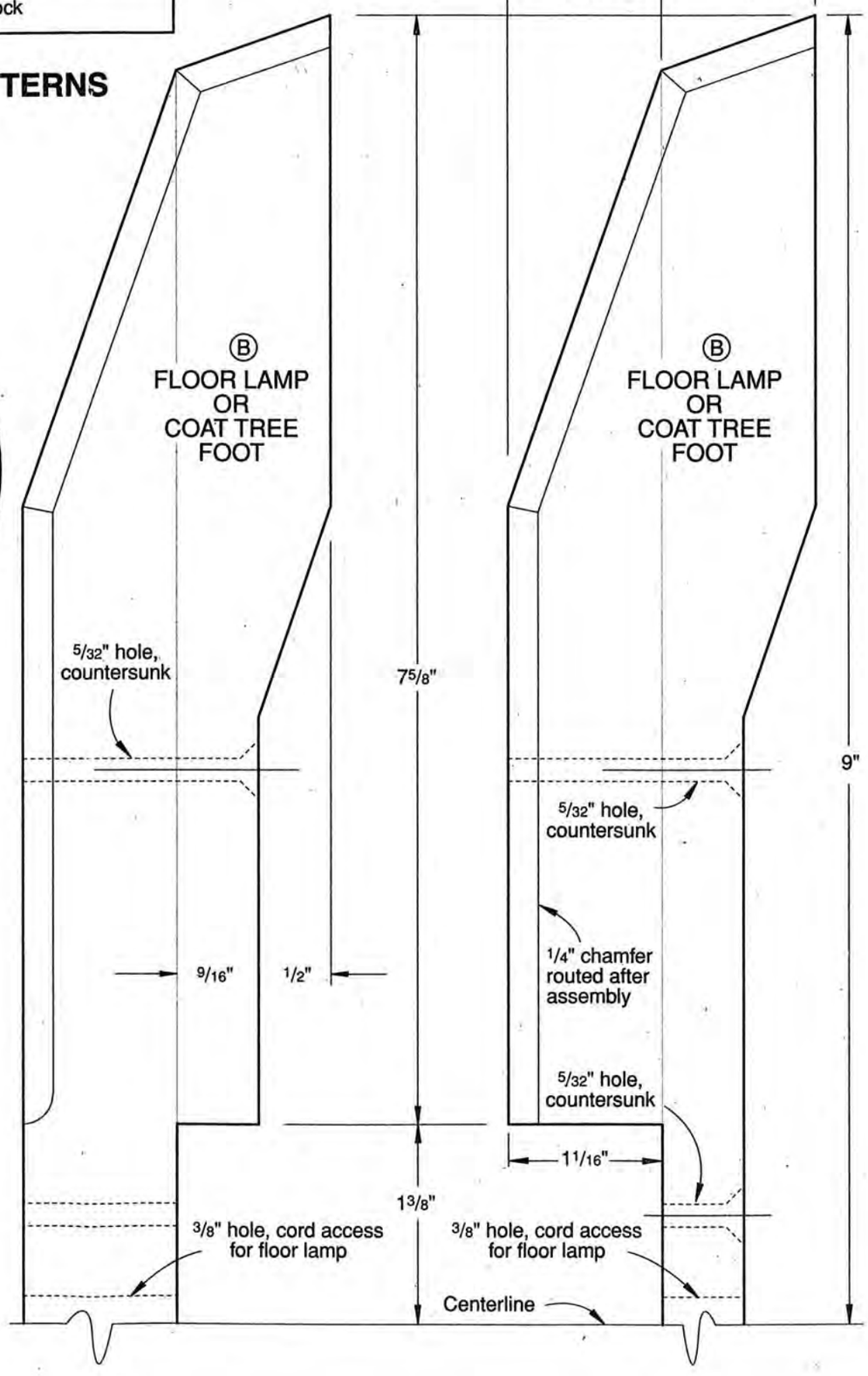
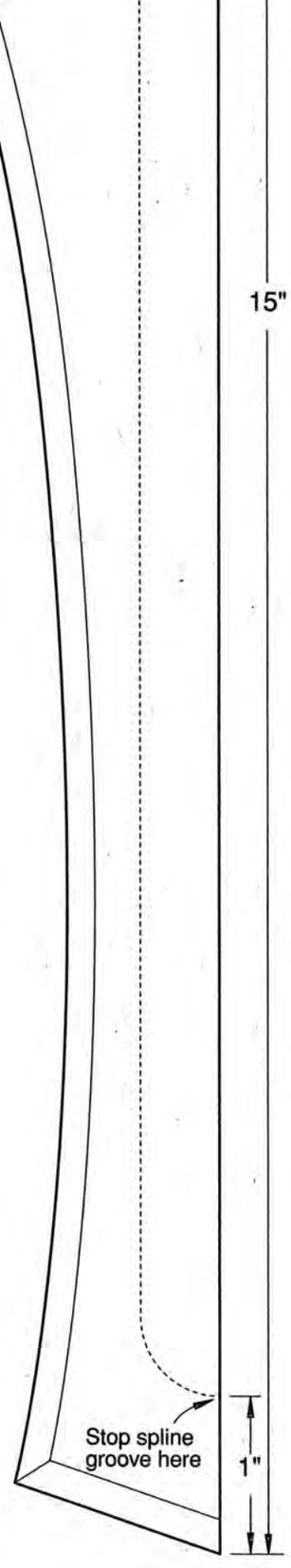


FULL-SIZED PATTERNS









RIPPING JIG
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